The Perceived Impact of a Mentoring Program for Youth with Fetal Alcohol Spectrum Disorders

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Education
in
Psychological Studies in Education

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Abstract

Prenatal alcohol exposure can result in the disability called fetal alcohol spectrum disorder (FASD) and the deficits most often associated with this are said to last a lifetime. In addition to the deficits directly resulting from prenatal alcohol exposure, individuals with FASD often also face adverse life outcomes including mental health difficulties. Researchers have shown that these difficulties can commence or increase in severity throughout adolescence underscoring the importance of intervention during this developmental period. One approach to intervention with adolescents is mentoring, however, although implemented in the community there is as of yet no evidence to support this approach in work with youth with FASD.

The purpose of this current study was to examine the perceived impact of a mentoring program on the mental health functioning of youth with FASD according to adolescents as well as their caregivers. BASC-2 data from fifteen adolescents and nine caregivers was used in order to determine the preliminary impact of the program. Even though no significant results were found a positive trend towards improvement was established. Both caregivers as well as adolescents indicated improvements across several aspects of mental health functioning including sense of inadequacy, hyperactivity, aggression, attention problems, depression, sensation seeking, atypicality, etc. Caregivers, in general, rated the youth's mental health functioning as more problematic than the adolescents themselves, which could potentially indicate that the adolescents underreported their mental health difficulties. Overall, these findings indicated that the program may be having a stabilizing effect on the mental health difficulties faced by adolescents with FASD.

Preface

This thesis is an original work by Rianne Elvira Spaans. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project name "An Evaluation of an Intervention Program for Adolescents with Fetal Alcohol Spectrum Disorders (FASD)", No. Pro00003652, June 22, 2009.

Acknowledgements

First, I would like to thank my supervisor, Dr. Jacqueline Pei for giving me the opportunity to pursue this work. I greatly appreciate and admire your inspiration and motivation for the work we do and as I move forward in my education, I will continue to view you as my mentor. Additional thanks to my committee members, Dr. George Buck and Dr. Carmen Rasmussen, for your time, feedback, and thought provoking conversations.

I would also like to thank all individuals at Catholic Social Services who have answered questions and offered assistance as well as all the mentors and mentees of the McDaniel Youth Program as they have made this research project possible. A special thanks goes out to Denise Plesuk, Colleen Hook, and Brittany Durant and I look forward to the continuation of our work together.

I would like to thank my parents and the rest of my family for your encouragement and unwavering support of my seemingly endless academic pursuits while being so far away from home. Finally, I would like to thank my incredible soon-to-be husband for supporting me through the process and providing me with more than enough encouragement and confidence to complete this project successfully.

Table of Contents

List of Tables

List of Figures

CHAPTER ONE

Introduction

The effects of prenatal alcohol exposure (PAE) have been known since the early 1970's when it was determined that children exposed to alcohol prenatally often showed brain damage as well as other deficits including growth deficiencies and developmental delays (Jones & Smith, 1973). Currently, 1 in 8 Canadian women are estimated to consume alcohol while pregnant (Mattson et al., 2013). Fortunately, not every alcohol exposed pregnancy leads to the disability now known as Fetal Alcohol Spectrum Disorder (FASD). However, when damage does occur as a result of alcohol exposure, it is said to last a lifetime (Streissguth et al., 1991). The effects of PAE fall on a spectrum ranging from mild to severe. The individual presentation of the disorder is thought to be impacted by the amount, duration, and timing of the alcohol exposure and can be influenced by personal and environmental factors such as genetics, nutrition, and exposure to other teratogens (Jonsson, Dennett & Littlejohn Eds., 2009). The incidence of FASD within Canada is estimated to be 1 in 100 live births and is considered the leading cause of developmental and cognitive disabilities in the country (Stade et al., 2009). Since the initial discovery of the effects of PAE, the consequences have been more clearly delineated to include a myriad of disabilities such as difficulties with intellectual ability, executive functioning, learning, memory, language, visual-spatial ability, motor functioning, academic achievement, attention, and adaptive functioning (Mattson, Crocker, & Nguyen, 2011).

As one might assume, the primary disabilities named above indicate that individuals with FASD likely require supports and assistance throughout their lifetime. These disabilities in combination with limited opportunities for interventions put these individuals at an increased risk of additional adverse life outcomes (e.g. expulsions from school, trouble with the law, alcohol/drug problems, mental health problems etc.). The primary disabilities combined with the potential for adverse life outcomes indicate the need for multifaceted service deliveries in order to support individuals with FASD and their families – to prevent these adverse outcomes. In 2009, it was estimated that the total annual cost associated with FASD equals $5.3 billion across Canada (Stade et al., 2009). These services include Child and Family Welfare, corrections, employment, education, health, justice and Police Services as well as caregivers, clinicians, and researchers (Public Health Agency of Canada, 2003). In Alberta, the cost of supporting one individual with FASD across their lifespan is estimated at $1.1 million. The costs of adverse life outcomes such as unemployment, school disruptions, crimes, mental health problems and homelessness combined are estimated at $22.85 million per year within Alberta indicating a need for interventions to help prevent these outcomes (Thanh, Moffatt, Jacobs, Chuck, & Jonsson, 2013).

One group of individuals with FASD who are especially vulnerable to the adverse life outcomes are adolescents. Adolescence is considered a very challenging developmental period for youth with FASD as a result of expected developmental changes in physical, psychosocial and cognitive domains, in addition to the primary disabilities named above. Compounding these developmental challenges are the increasing societal demands and expectations for independence, which youth with FASD are unable to keep up with – consequently increasing the functional consequences of the developmental gap between youth with FASD and their peers. Interventions for individuals with FASD to date have been focused on early childhood and school aged children (Paley & O'Connor, 2011) leaving a gap in the adolescent years, a period of heightened vulnerability. One particular risk in this period is the emergence of mental health difficulties (Streissguth, Barr, Kogan, & Bookstein, 1996). It is therefore important that interventions are developed to support these youth and to hopefully prevent the emergence of mental health problems that may further compromise their future success. One such approach to supporting adolescents is youth mentoring. Identified as effective for reducing risk of mental health difficulties in neurotypical adolescents, it is as of yet unclear if the same positive effects may be observed in adolescents with FASD. As such, the goals of this study were to determine the perceived impact of a mentoring program on the mental health of youth with FASD.

CHAPTER TWO

Literature Review

FASD: History, Terminology, and Diagnosis

In the late 1960's, patterns of abnormal morphogenesis and developmental delays were observed in children born to alcoholic parents (Lemoine, Harrousseau, Borteyru, & Meneut, 1968). Jones and Smith (1973) observed similar patterns of anomalies in children born to alcoholic mothers as they noted birth defects including craniofacial, limb, and cardiovascular defects, growth deficiencies and developmental delays (Jones, Smith, Ulleland, & Streissguth, 1973; Warren & Hewitt, 2009). It was concluded that these deficits were a result of the prenatal alcohol exposure and the pattern of anomalies was named Fetal Alcohol Syndrome (FAS). Clinicians later recognized that the physical and neurobehavioral deficits were variable for children exposed prenatally, as not all individuals presented with the exact same deficits. Therefore, in 1978 the term suspected or possible fetal alcohol effects (FAE) was introduced to describe the partial expression of the syndrome (Clarren & Smith, 1978). However, it was suggested that this term may be inappropriately used to label children with behavioral difficulties coming from families who were suspected to abuse alcohol, indicating a need to reconsider this terminology (Aase, Jones, & Clarren, 1995; Calhoun & Warren, 2007). To address this concern, it was determined that a clear description of diagnostic criteria was required. The non-diagnostic, umbrella term, Fetal Alcohol Spectrum Disorder (FASD), was proposed by an Institute of Medicine (IOM) appointed committee in 1996 (Calhoun & Warren, 2007).

Currently, several different diagnostic categories exist within the umbrella term including; Fetal Alcohol Syndrome (FAS) with or without confirmed prenatal alcohol exposure, partial FAS (pFAS), Alcohol Related Birth Defects (ARBD) and Alcohol Related Neurobehavioural Disorders (ARND) (Calhoun & Warren, 2007). However, many clinicians and researchers considered the diagnostic criteria established by the IOM to be vague which led to difficulty in standardized diagnosis.

In 2004 the *4-Digit Diagnostic Code* was developed by Astley (2004) as a tool to help objectively measure the impairments caused by prenatal alcohol exposure. This coding system ranks the diagnostic information of four features on a 4-point scale with a score of 1 indicating an absence of the feature and a score of 4 reflecting a strong presence. The four features assessed are 1) growth deficiency (e.g. small heads, shorter bodies etc.); 2) facial dysmorphology (indistinct philtrum, short palpebral fissures, flat midface, short nose with a low nasal bridge, or thin upper lip); 3) central nervous system (CNS) damage or dysfunction; 4) and prenatal alcohol exposure (Jonsson et al., 2009). Individuals with FAS meet criteria for all four areas including growth deficiencies, behavioural and cognitive abnormalities from central nervous system damage as well as the characteristic facial dysmorphology (Jones & Streissguth, 2010). The characteristic FAS facial features are a result of alcohol exposure during a short and specific vulnerable period early in the first trimester. Researchers have shown that relatively few children exhibit all physical features required to diagnose FAS due to the specific period in which the fetus' facial features are developed (Rasmussen, Horne, & Witol, 2006; Streissguth & O'Malley, 2000). In comparison to development of the facial structures, the brain develops throughout the full pregnancy and is therefore vulnerable to the effects of alcohol for a longer period. It is therefore possible for an individual to have no presence of facial dysmorphology while they do exhibit other deficits as a result of prenatal alcohol exposure. Individuals who present as such might be assigned a diagnosis of pFAS, ARBD, or ARND depending on their presentation.

In order to standardize the diagnosis of FASD further within Canada, the Canadian Diagnostic Guidelines were developed (Chudley et al., 2005). The guidelines include both the 4-

Digit Diagnostic Code as well as the terminology put forth by the IOM to create a final diagnosis. The guidelines propose the use of multidisciplinary teams including pediatricians, speech language pathologists, psychologists and other health professionals to assess individuals in eight domains including 1) the intellectual domain; 2) academic achievement; 3) attention; 4) sensory, motor, visual, and spatial skills; 5) communication; 6) memory; 7) executive functions (e.g. judgement, inhibition, mental flexibility, problem solving, planning, and sequencing); and 8) adaptive functioning (Jonsson et al., 2009). The appropriate IOM term (e.g. FAS, pFASD, ARND or ARBD) is then assigned to individuals based on the results found by the multidisciplinary team. It is this system that is most commonly used in Canada today.

Common Outcomes for FASD

The eight domains described above represent the areas often impacted in individuals with FASD. Currently the term FASD is used to describe the range of physical, behavioural, cognitive, and psychosocial impairments that result from prenatal alcohol exposure (Astley, 2004). Individuals with FASD tend to experience neurobehavioural deficits that can range from mild to severe in any of the following areas including intellectual ability, executive functioning, learning, memory, language, visual-spatial ability, motor functioning, academic achievement, attention, and adaptive functioning (Mattson, Crocker & Nguyen, 2011). Individuals with FASD also tend to have "increased internalizing and externalizing behaviour problems... and high rates of comorbid psychiatric disorders" (Mattson et al., 2011 p.95). These deficits are referred to as primary neurobehavioral disabilities and are said to be the result of brain damage due to prenatal alcohol exposure (Mattson et al., 2011).

In addition to these primary disabilities, individuals with FASD often face "secondary disabilities" or what are currently referred to as adverse life outcomes. The outcomes most often faced by individuals with FASD include getting into trouble with the law, exhibiting inappropriate sexual behaviors, experiencing mental health difficulties, school problems, and drug/alcohol problems (Streissguth et al. 2004; Carmichael Olson, Oti, Gelo & Beck, 2009). Streissguth and colleagues (2004) found that 61 percent of adults and adolescents faced disrupted school experiences, 60 percent had been in trouble with the law, and 50 percent had been confined in prison/detention centres, psychiatric settings or residential alcohol/drug treatment programs. Furthermore, 49 percent showed repeated inappropriate sexual behaviours and 35 percent of the individuals struggled with alcohol/drug problems. According to many researchers, these adverse life outcomes are not present at birth and are a result of the interaction between the primary disabilities and environmental factors to which these individuals are often exposed (Carmichael Olson et al., 2009; Streissguth et al., 2004; Thanh et al., 2013). Some researchers classify mental health difficulties as a primary disability (Mattson et al., 2011), however, most often these problems are considered to be influenced by both the brain injury resulting from prenatal alcohol exposure as well as the individuals' environment and can therefore be considered an adverse life outcome.

Environmental factors include the postnatal environments and experiences the individuals face after the alcohol exposure occurred. Many individuals with FASD face environmental factors that may put them at a higher risk of adverse life outcomes. In a study conducted by Olson and colleagues (2007) 82.6 percent of the participants with FASD faced postnatal environmental adversities or environmental risks such as living with parental substance abuse, living in poverty, experiencing physical/sexual abuse or domestic violence (Carmichael Olson et al., 2009; Werner, 1986). Individuals with FASD may also experience high rates of caregiver stress, early maternal death, and various care-giving situations including foster homes

(Carmichael Olson et al., 2009). Children with FASD are often at a higher risk of exposure to any of these environmental risk factors. In the above mentioned study by Streissguth and colleagues (2004), 67 percent of the participants had experienced physical/sexual abuse or had been victims of domestic violence and 80 percent were not raised by their biological mothers. Other researchers have shown that individuals with FASD are overrepresented in the foster care system as well as within Aboriginal communities in Canada (Fuchs, Burnside, Marchenski, & Murdy, 2005; Popova et al., 2013; Jonsson et al., 2009).

Environmental factors or risk factors such as the ones named above, combined with the already existing primary disabilities (e.g. deficits in intellectual abilities or executive functioning etc.) and a lack of appropriate and effective interventions is said to exacerbate the adverse life outcomes faced by these individuals (Rasmussen, Andrew, Zwaigenbaum, & Tough, 2008; Streissguth, 1997; Streissguth et al., 2004). This occurrence has been referred to as "double jeopardy" indicating that individuals with FASD are at an increased risk of adverse life outcomes as a result of multiple adversities (Carmichael Olson et al., 2009).

Adolescents with FASD

When considering adverse life outcomes a particularly vulnerable group are adolescents with FASD. As stated earlier Streissguth et al. (2004) indicated that individuals with FASD are often faced with adverse life outcomes including school problems, alcohol/drug problems, confinement and inappropriate sexual behaviours, and that these outcomes increase with age. For instance, thirty-nine percent of children exhibited inappropriate sexual behaviours in comparison to 48 percent of adolescents and 52 percent of adults. Similarly, 14 percent of children indicated disrupted school experiences and trouble with the law compared to 61 and 60 percent of adolescents and adults, respectively (Streissguth et al., 2004). An increase in confinement rates (psychiatric hospitalizations and incarcerations) as well as alcohol and drug problems, with age, was also noted.

Primary disabilities such as intellectual functioning, facial malformations, and growth delays persist as individuals mature. The adverse life outcomes, however, are said to commence or increase during young adolescence and adulthood. Spohr, Willms, and Steinhausen (2007) found that emotional and behavioural problems such as aggression and delinquent problems persist into young adulthood and that new mental health concerns (e.g. thought disorders and intrusive behaviours) may occur during adolescence.

The occurrence of mental health problems in individuals with FASD has been an area of study for several researchers. Streissguth et al. (1996) identified mental health problems as the most prevalent adverse life outcome as 90 percent of individuals with FASD indicated some level of difficulty in the area of mental health. Common difficulties include depression, mood and anxiety disorders, ADHD, conduct disorder, or substance abuse (Pei et al., 2011). These risk factors overlap with the adverse life outcomes faced by many individuals and especially adolescents with FASD and they are therefore considered to be at a higher risk of suicide or attempting suicide (O'Malley & Huggins, 2005). Pei et al., (2011) summarized that the mental health difficulties that occur in childhood persist over time and may increase in severity and number throughout adolescence and adulthood.

In addition to the environmental risk factors and mental health difficulties that can exacerbate adverse life outcomes, Rasmussen and Wyper (2007) reviewed certain cognitive structures involved in high risk behaviours that may explain the increased risk of adverse life outcomes for adolescents with FASD. High risk behaviours or problem behaviours include substance abuse, unsafe sexual practice, delinquency, tobacco use, risky driving, suicide, aggressive and antisocial behaviour. These high risk behaviours can therefore be interpreted as risk factors for undesirable or adverse outcomes (Jessor, 1998). They are often impacted by feelings of sensation-seeking, impulsivity, or depression and are heighted during adolescence as a result of pubertal changes (Steinberg, 2005). Executive functioning, which is largely housed in the prefrontal cortex, is an important concept in risk taking behaviours as it includes skills such as planning, cause-effect reasoning, inhibition, decision making and the regulation of behavior and emotions (Rasmussen & Wyper, 2007). In neurotypical individuals the prefrontal cortex continues to develop throughout adolescents and into the mid-twenties resulting in a continuation of the development of executive functioning (Casey, Giedd, & Thomas, 2000). This creates a gap between the behaviours of adolescents and their cognitive capacities as their brains are still developing the skills needed to make appropriate decisions (Casey et al., 2000). This gap is even greater in individuals with FASD as they tend to experience abnormalities in the prefrontal cortex and executive functioning as a result of the prenatal alcohol exposure (Rasmussen & Wyper, 2007). This indicates that adolescents with FASD are particularly vulnerable to high risk behaviours and will likely have difficulty regulating their behaviours and emotions. It should also be noted that non-affected adolescents who grow up with adversities such as poverty, foster care, or maltreatment are also at an increased risk of exhibiting high risk behaviours (Rasmussen & Wyper, 2007). Many adolescents with FASD also experience these environmental adversities, which in combination with the primary deficits resulting from prenatal alcohol exposure puts them at an even higher risk and provides more evidence for the term "double jeopardy".

Interventions for Adolescents

Although it is not atypical for adolescents to be at a higher risk of adverse life outcomes compared to children, as this is also seen in neurotypical youth, adolescence is a particularly vulnerable developmental period for individuals with FASD due to the combination of neurocognitive and environmental risks in addition to the developmental tensions. Since individuals are not born with adverse life outcomes but are rather exposed to risk factors that can impact the occurrence of these outcomes (e.g. environmental factors and primary disabilities), researchers have tried to identify factors that can protect individuals from these negative outcomes. Streissguth et al. (2004) identified that receiving a diagnosis before the age of six, receiving services for developmental disabilities, not being exposed to abuse or violence, experiencing long-term living arrangements and living in high quality positive home environments can protect affected individuals from some of the adverse life outcomes. It was determined that the likelihood of adverse outcomes increased for individuals who received a diagnosis after the age of 12 and for those who were exposed to abuse or domestic violence. The risk of inappropriate sexual behaviour, disrupted school experiences, alcohol/drug problem and trouble with the law all increased as the number of years lived in a stable and nurturing home decreased indicating the importance of home environments (Streissguth et al., 2004). Overall, researchers agree that good quality care-giving and stability of home environments are important to success for individuals with FASD (Carmichael Olson et al., 2009; Giunta & Streissguth, 1988; Weiner & Morse, 1994). In addition to these factors, Duquette, Stodel, Fullarton and Hagglund (2006) identified parental advocacy as an environmental factor that may protect adolescents with FASD from dropping out of high school.

Animal studies have shown that environmental enhancements including neonatal handling, environmental enrichment and motor training can have positive effects on the behavioural and learning outcomes in prenatally exposed rats (Hannigan, O'Leary-Moore & Berman 2007; Weinberg, Kim & Yu, 1995). This suggests that it is possible to influence the postnatal environment or the experiences of individuals with FASD with the aim to improve aspects of functioning. This makes way for the possibility of developing interventions to increase the presence of the earlier identified protective factors.

The increased risk of high risk behaviours, mental health problems, and other adverse life outcomes clearly indicates the need for interventions for this population. Currently there are very few interventions available for adolescents with FASD and both Paley and O'Connor (2011) as well as Premji, Benzies, Serrett and Hayden (2006) call for more interventions for this age group as their needs differ from those of school-aged children. The researchers indicate a need for interventions that are aimed at decreasing the participation in high risk activities, focus on enhancing skills in decision making and problem solving as well as behaviour regulation (Paley & O'Connor, 2011 p. 72). Interventions should reduce vulnerabilities, modify environmental stressors and increase protective factors (Premji et al., 2006). However, capitalizing on the main protective factors identified by Streissguth et al. (2004) requires the involvement of the family or caregivers. This may prove difficult during the adolescent years as well as for adolescents who currently do not have a stable home environment (e.g. foster care, homeless youth, youth in residential treatment programs, those living independently etc.). Extensive research examining the protective factors and interventions for vulnerable youth can be explored in order to find additional potential protective factors for adolescents with FASD.

FASD Youth and At-Risk Youth

Vulnerable youth or at-risk youth are terms used to described individuals who face many adversities while growing up. The adversities and adverse life outcomes faced by this population are often similar to those faced by youth with FASD. Due to the similarities in outcomes between the two groups of youth it can be concluded that adolescents with FASD may benefit from similar strategies. Research on the protective factors for vulnerable youth indicates that protective factors include qualities within the family (supportive, warm relationships) as well as individual qualities (positive temperament, self-esteem, intelligence, internal locus of control), and qualities within the community (positive peer relationships, connections with caring adults) (Murray, 2003). In addition to these factors, Laursen and Birimingham (2003) emphasized the significance of adult relationships in the lives of vulnerable youth as a protective factor. This significant adult does not need to be a parent or a parental figure but needs to be a caring adult who is available to the youth and who is " accepting, supportive, understanding, and interested" in their lives (Laursen & Birimingham, 2003 p. 246).

Considering that enhancement of the home environment might not be feasible, an intervention aimed at enhancing the qualities of individuals and communities might be a better fit for this population. One way to do this is by introducing the youth to an adult with whom they can create a caring and supportive relationship while exploring and potentially building on individual protective factors such as self-esteem, internal locus of control, decision making skills, and a positive outlook on the future. A type of intervention that allows for this change in environment is mentoring.

Mentoring: Definition and History

The term *mentor* can be traced back as far as 800 B.C. as the character Mentor in Homer's *The Odyssey* provided guidance to a boy as a trusted friend and advisor (DuBois & Karcher, 2005). In ancient Greece, a mentor was seen as someone who was responsible for the physical, social, intellectual, and spiritual development of a younger person. Throughout history, various types of informal and formal mentoring occurred including apprenticeships, teachers or coaches. Today, many different definitions exist of what a mentor is. According to Bowen

(1985) "mentoring occurs when a senior person (the mentor) in terms of age and experience undertakes to provide information, advice and emotional support for a junior person (the protégé) in a relationship lasting over an extended period of time and marked by substantial emotional commitment by both parties" (p. 31). Mentoring can also be described as, “an intense interpersonal exchange…in which the mentor provides support, direction, and feedback regarding career plans and personal development” (Russell & Adams, 1997 p. 2). Some researchers describe mentoring as an emotionally deep relationship while others define it as less emotional. Opinions also differ on the age difference required between mentor and mentee, the duration of the relationship, and the different functions provided by the mentors (Eby, Rhodes, & Allen, 2007). In order to reach a more universal definition and to aid research on mentoring it is recommended that definitions include several common characteristics (Eby, et al., 2007).

The most common characteristic is the one-on-one relationship between the mentor and mentee that may be beneficial to the mentee. Other characteristics include 1) an interaction between the two individuals for an extended period of time, 2) inequality of knowledge, experience, or power between the mentor and the mentee (with the mentor being the most knowledgeable, experienced or powerful), 3) an opportunity for the mentee to benefit from the knowledge, experience or abilities of the mentor, 4) and the absence of role inequality between the two individuals but rather a relationship based on helping (Tolan, Henry, Schoeny, Lovegrove & Nichols, 2013). The last characteristic prevents relationships such as parent-child, teacher-student, or therapist-client to be classified as a mentoring relationship.

The definitions provided by researchers and other individuals often refer to both formal and informal mentoring relationships and it is therefore important to note the difference between these two types. Formal mentoring includes mentors who have received training and supervision on how to mentor. Informal mentors, however, do not receive this specific training and are sometimes referred to as "natural mentors" as they are individuals who form caring relationships with younger persons and may offer guidance or emotional support outside of a professional setting (DuBois & Karcher, 2014). Examples of this type of mentor can be siblings or neighbors.

Throughout history many of the mentoring relationships that occurred were considered to be informal and it wasn't until the 20th century that a large scale interest in formal mentoring occurred in North America. Poor social conditions became a product of industrialization and urbanization and many new immigrants faced poverty and exploitation (DuBois & Karcher, 2005). Children were especially vulnerable to fall victim to the poor living circumstances in this new society as they faced many problems including poverty, school dropout rates, emotional, physical and/or sexual abuse as well as exploitation. As a result, juvenile delinquency increased significantly (DuBois & Karcher, 2005). The behaviour of the young offenders was considered to be a direct result of the environment they were exposed to. This was confirmed by high rates of recidivism after the youth were sent back into a "toxic environment" upon completion of their sentence in juvenile prison (DuBois & Karcher, 2005). The idea of probation officers was therefore created as a way to provide these young offenders with a positive role model and steer them away from the influences of their surrounding environments. Probation officers can therefore be viewed as the first formal type of mentors for troubled youth in North America and quickly this idea of having a mentor or a positive role model encouraged the formation of the mentoring movement in the United States (DuBois & Karcher, 2005).

Characteristics of Mentoring

Due to the increased use of mentors as a result of the mentoring movement, the effectiveness of such mentoring programs needed to be examined as a formal type of intervention. The theory behind the concept of mentoring youth as an intervention includes the assumption that the mutual, trusting, and empathic relationships with adults will promote the social-emotional, cognitive, and identity development of youth which will result in positive emotional and behavioural outcomes (Rhodes, 2005). Before considering the effect of the program it is important to understand the concepts that are said to bring about the desired change. According to Rhodes (2005) this change can be brought forward by enhancing social relationships and emotional well-being, cognitive skills as well as identity development. Changes in the youth's social relationships and emotional well-being can be made through offering them escapes from daily stress and assistance with emotional regulation. Enhancements of cognitive skills are made possible through instruction and conversation between the mentee and mentor.

Lastly, changes in positive identity development can occur as a result of the mentor serving as a role model and an advocate. As the desired outcomes are highly influenced by the mentoring relationship it is important to consider factors that may impact the development of this relationship (Rhodes, Spencer, Keller, Liang & Noam, 2006). Researchers have shown that the relationship formed between the mentor and the mentee is affected by personal factors including the mentees' previous attachments and motivation as well as the mentor's personal qualities such as attunement, patience, flexibility, and persistence (Rhodes, 2002). Another important aspect that may impact the quality of the relationship and therefore the effectiveness of a program is the longevity of the relationship. Sufficient time is required in order for the mentoring relationship to develop and to have an impact. When insufficient time is provided it is unlikely that positive effects will occur. Mentoring may even be harmful when the relationship is ended prematurely or on negative terms as this may result in negative outcomes including exacerbating the individual's sensitivity to rejection and potential damage to the self-concept (Rhodes et al., 2006).

Predictors of positive program effects were also examined by DuBois, Holloway, Valentine, and Cooper (2002) who concluded that there are a set of features that increase the likelihood of positive results. This set of features can be considered "best practices" and are often referred to when developing mentoring programs. DuBois and colleagues (2006) identified ongoing training for mentors, structured activities for the mentor and mentee, clear expectations around the frequency of mentor-meetings, program support and involvement of the mentees family as the strongest predictors of positive program effects. This indicates that programs that included greater number of these factors showed greater benefits.

Even though not included in the best practices DuBois and colleagues (2002) also point out the importance of the type of mentoring program used. Since the beginning of the mentoring movement in the 20th century many different types of mentoring programs have been developed and trialed. Big Brother Big Sisters is one of the most well-known mentoring organizations in North America which is based on an one-on-one interaction between the mentor and mentee within a community setting (DuBois & Karcher, 2005). Other types of mentoring programs include faith-based organizations, after-school based group programs, and the integration of mentoring with other programs and other services such as mentoring academically at-risk youth and juvenile offenders (DuBois & Karcher, 2005). Developmental mentoring is a type of mentoring in which a cross-age approach is used. An example of this type of mentoring is a high school student mentoring an elementary student. This approach is often used in schools and can be helpful in creating school connectedness (Karcher, 2005). Mentoring can occur in different settings such as one-on-one, in groups, in a mixed format using both one-on-one and group mentoring and recently even through online messaging called E-mentoring (Vandenberghe, 2013). Even though the type of program used did not result in an increase of effectiveness it is important to consider the match between the type of program and the needs as well as the desired outcomes for the mentees.

Lastly, research is emerging on the topic of goal setting as an important factor in program effectiveness. The theory behind goal setting highlights the idea of "training youth to plan and think positively about their future (DuBois & Karcher, 2014 p. 96). Goal setting can be empowering for the mentee and provides the mentoring relationship with direction and purpose. Some researchers have found significant effects in programs that use goals for the mentees (LoSciuto, Rajala, Townsend, & Taylor, 1996; Portwood, Ayers, Kinnison, Waris, & Wise, 2005). However, due to mediating and moderating effects including the quality and duration of the mentoring relationship, the true impact of goal setting is unclear and further research is needed. However, previous research shows that when goal setting is included in the mentoring program it is important that this is done in a collaborative manner between the mentor and mentee (Karcher, Herrera, & Hansen, 2010).

Impact of Mentoring Programs

Although many studies have been conducted to examine the effectiveness of mentoring programs, it is difficult to make general statements about the outcomes as great variability exists between mentoring programs (e.g. goals, setting, and duration) and mentoring relationships (e.g. quality and quantity). A meta-analysis of 55 mentoring programs showed modest or small overall benefits to the average youth (DuBois et al., 2002). Increased effectiveness was noted for programs using the best practice factors described above. In comparison to the average youth, at-risk youth who faced environmental risk and adversity, were more likely to benefit from mentoring programs (DuBois et al., 2002). However, it should be noted that this population is also at an increased risk of being negatively impacted as a result of participation in a mentoring program. According to DuBois et al. (2002) this can be explained by personal characteristics of at risk-youth such as negative previous attachments. These youth may require specialized services and supports that are not available through a mentoring program as mentors are often volunteers and non-professionals. The efforts made during the program may therefore be inadequate and could lead to a worsening of the youth's functioning. Overall, the results of this meta-analysis indicate some positive effects of mentoring programs in general. This finding is consistent with that of Roberts, Liabo, Lucas, DuBois, and Sheldon (2004) as they concluded in their literature review that mentoring offers benefits to "some youth, in some circumstances, and in relation to some outcomes" (p.513).

As stated earlier, the mentoring relationship is said to potentially promote social-emotional, cognitive, and identity development of youth (Rhodes, 2005). It is therefore important to consider the influence of mentoring programs in these three areas.

Social-Emotional Functioning. Various researchers have shown that mentoring programs formed through community and school organizations positively impact children's and adolescents' social-emotional functioning including improvements in self-esteem and self-worth (Karcher, 2008; Wood & Mayo-Wilson, 2012; King, Vidourek, Davis & McClellan, 2002). In addition, positive changes in relationships with parents, peers, and school were also found (King et al., 2002; Karcher, 2008). Mentored individuals were also significantly less likely to be depressed or involved in bullying and physical fights (King et al., 2002). Several studies also show improvements in school connectedness, unexcused absences and perceived academic competence (Karcher, Davis, & Powell, 2002; Karcher, 2005; Rhodes, Grossman & Resch, 2000). Komosa-Hawkins (2012) examined the influence of school-based mentoring on the social-emotional health of adolescents and even though the results were found not to be statistically significant, positive trends in interpersonal strength, school functioning, affective strength, and career strength were identified. This study also showed that mentoring may serve as a buffering effect in terms of the adverse outcomes related to adolescents as the non-mentored adolescents' score on the measures of social-emotional health declined.

Cognitive Development. Mentoring has also been shown to provide children and adolescents with scaffolding to help them acquire new thinking skills and is therefore seen to have an impact on cognitive development (DuBois & Karcher, 2005). The presence of mentors has also been linked to improvements in academic competence and achievement as well as student motivation (Lee & Cramond, 1999; Slicker & Palmer, 1993). However, some studies have found no benefits from mentoring in terms of academic outcomes (Wood & Mayo-Wilson, 2012; Karcher, 2008). The influence of mentoring on academic achievement is therefore considered to be unclear.

Identity Development. According to Erikson (1963) identity development is the main focus during adolescence as adolescents work towards independence and consider personal values and ideas. Positive identity development can also be seen as a buffer for risk behaviours such as substance use and general deviance (Dumas, Ellis, & Wolfe, 2012). Previous research on mentoring shows that mentors can affect youth's identity development as children and adolescents with a mentor are less likely to engage in delinquent behaviours and are more likely to graduate from high school (Aseltine, Dupre, & Lamlein, 2004; Grossman & Tierney, 1998; Klaw, Fitzgerald, & Rhodes, 2003). Mentored youth also appeared less aggressive as a result of mentoring (Tolan et al., 2014). Lastly, mixed results have been found in preventing substance use in mentored youth (Vandenberghe, 2013).

As the mentoring movement was started in the 20th century to help out at-risk youth including young offenders, many of the studies on the effectiveness of mentoring programs target this type of population (DuBois & Karcher, 2005). DuBois et al. (2002) noted that mentoring programs have the biggest effect on at-risk children rather than average youth that affirms the start of the mentoring movement for at-risk youth. At-risk youth in these studies often include adolescents or children from the inner-city communities, lower SES, different ethnic background, young offenders, or children/adolescents who have been exposed to trauma. Since it is known that adolescents with FASD face many of the same adverse life outcomes as non-prenatally exposed at-risk youth, a mentoring program might help reduce some of the adverse life outcomes for these adolescents in the same way it helped build protective factors for neurotypical at-risk adolescents. No studies have been done yet to find out the relationship between a mentoring program and the adverse life outcomes of youth with FASD.

Present Study

Although it is clear that adolescents with FASD often face a myriad of adverse life outcomes, limited interventions have been put in place in order to improve these outcomes. Researchers indicate that enhancing the environment to which these individuals are exposed to may provide them with protective factors against adverse outcomes such as mental health problems, disrupted school experiences, trouble with the law or inappropriate sexual behaviours. Mentoring programs have been found effective in providing neurotypical adolescents with a supportive and caring relationship that leads to positive changes in social emotional functioning, cognitive development and identity development. The purpose of the present study is therefore to add to the mentoring and FASD literature by examining the impact of a mentoring program for adolescents with FASD. This study is a part of a larger data set and focused specifically on the impacts of this program on mental health functioning as mental health problems have been identified as a very prevalent adverse life outcome for individuals with FASD and are said to increase in severity throughout adolescence (Streissguth et al., 1996; Pei et al., 2011).

In addition to investigating the impact of the mentoring program on mental health outcomes the self-perception of mental health related problems for individuals with FASD was also examined. Self-perception is said to become more accurate with age as young children start off with an overly positive self image. As individuals age, the perceptions others hold of them such as peers, parents, and teacher get integrated with one's own perception, which then leads to more realistic self-perceptions in adolescence. This maturation process of self-perception may be difficult for certain individuals as it requires cognitive functions and levels of thinking that some individuals may not have developed yet by the time they reach adolescence. Malbin (2000) coined the term "dysmaturation" to describe the difference between individuals with prenatal alcohol exposure and same aged peers as she indicated that individuals with FASD often function at a developmentally younger age. As a result, the self-perceptions that adolescents with FASD hold may be similar to that of a younger child indicating the potential for an overly positive self concept. Mariasine, Pei, Poth, Henneveld, and Rasmussen (2014) examined the difference in perception of mental health problems between adolescent self-report and caregiver report and noted significant discrepancies in their responses. Adolescents with FASD were observed to underreport difficulties and areas of weakness in comparison to their caregivers. It was therefore concluded that multi-rater responses are recommended when working with this population. The current study therefore aims to further explore this phenomenon by examining the different perspectives of the impact of a mentoring program on the mental health of the adolescents through self-report as well as caregiver report over time in the program.

Research Question 1: What is the perceived impact of a mentoring program on the mental health problems faced by adolescents with FASD?

The perceived impact of the mentoring program will be examined as reported by the adolescents and the caregivers.

Hypothesis1a: Adolescent self-report will show an overall improvement in their mental health functioning (including both clinical and adaptive scales) over the 18 months in the program. The following areas of mental health are thought to show greater improvement than others as indicated by previous mentoring research for neurotypical and at-risk youth (Karcher, 2008; King et al., 2002; Dumas et al., 2012; Komosa-Hawkins, 2012): self-esteem, depression, sensation seeking, interpersonal relationships, attitude to school, and relations with parents.

Hypothesis1b: Caregiver report will show overall improvements in mental health (including both clinical and adaptive scales) for the adolescents enrolled in the program. Greater improvements are expected to occur for aggression and depression compared to other areas of mental health functioning as indicated by previous mentoring research for neutotypical and at-risk youth (King et al., 2002; Tolan et al., 2014).

Research Question 2: Do youth and their caregivers perceive the mental health functioning of the adolescents enrolled in the program differently?

The difference between self-report and caregiver report will be examined to determine a more realistic image of the mental health problems faced by individuals with FASD during their adolescence.

Hypothesis 2a: The mental health problems reported by the adolescents will differ significantly from the mental health problem reported by the caregivers at the point of program entry. The adolescents are hypothesized to underreport difficulties.

Hypothesis 2b: The difference between self and caregiver report will become smaller throughout the duration of the program. Caregivers are expected to indicate decreases in mental health concerns due to the program impact and adolescents are expected to have developed a more "realistic" perception of their mental health problems, therefore reporting the same, or even more areas of concern. Combined, this is expected to minimize the gap between the two perceptions.

CHAPTER THREE

Method

Participants and Procedures

This research was part of a partnership between the University of Alberta and Catholic Social Services, a community based agency that includes many programs for individuals with FASD in Edmonton, Alberta. One of the programs run by the agency is a mentoring program geared towards reducing the adverse life outcomes for adolescents diagnosed with FASD. Data collected during this program (e.g. surveys, rating scales, demographic information etc.) is available to the research team at the University of Alberta through the above named partnership and ethics was approved and obtained from the Department of Educational Psychology Research and Ethics Committee at the University of Alberta. The current study was designed to focus specifically on mental health outcomes as the literature review identified this as an area of need for this population.

The McDaniel Youth Program. The mentoring program used in this study is called the McDaniel Youth Program and aims to provide supports to youth with FASD and to help them make a successful transition into adulthood. Adolescents between the ages of 13 to 19 are allowed to enroll in the program if they have a confirmed or suspected diagnosis of FASD. Youth without a diagnosis established within the Canadian guidelines, but with confirmed prenatal alcohol exposure (PAE) are also included in the program, and are identified as PAE. Enrolment is ongoing, and staggered, so youth are all at different points in the program at any given time. Upon enrolment in the mentoring program, informed consent for inclusion of their information in the research data was obtained from legal guardians, and assent was obtained from the adolescents. Participants were then assigned a mentor and the adolescents as well as their caregivers were asked to complete a battery of rating scales before starting the mentoring intervention in order to obtain a baseline of the adolescent's functioning. The battery includes rating scales measuring social skills, behavioral and emotional functioning, and mental health.

Program participants and their caregivers are asked to completed the same battery of rating scales again after completing 18 months in the program as well as after completing entire the program at three years, in order to collected both interim and post intervention data to provide ongoing feedback to program staff regarding youth functioning. Each time the program participants are asked to complete the rating scales, the test administrator - often the mentor, explained the forms and provided assistance when needed. In some cases the administrator is required to read the items out loud or provide other types of assistance as a result of reading or comprehension difficulties.

Due to the variability in family environments for individuals with FASD, the role of the caregiver rater is varied. The description of caregiver on questionnaires is therefore left broad and includes all individuals who have significant knowledge of the adolescent's daily activities. As the caregivers are not actively involved in the program, it is often difficult to collect information from them, which may lead to an increased number of missing data for this group of raters.

Current Study. For the purpose of the current study only the data collected from the rating scale measuring mental health was used. As the program is ongoing it is important to note that the data used in this study was pulled on June 19th, 2014 and therefore only includes data collected by the program before this date. Upon examining the mental health data collected, it became evident that post-intervention data (program completion at the 3 year point) had been collected for only three participants at that time. This limited number of participants does not allow for an accurate analysis of the overall impact of the program on the mental health of the adolescents. It was therefore decided to limit the scope of the study to examine the impact of the mentoring program over 18 months as this data was currently available to the research team. The preliminary impact of the program can thus be examined by analyzing the difference between baseline and interim data. As a result, 15 adolescents (five male, ten females) aged 13 to 19 with a FASD diagnosis as well as nine caregivers (eight female, one unknown) participated in this study.

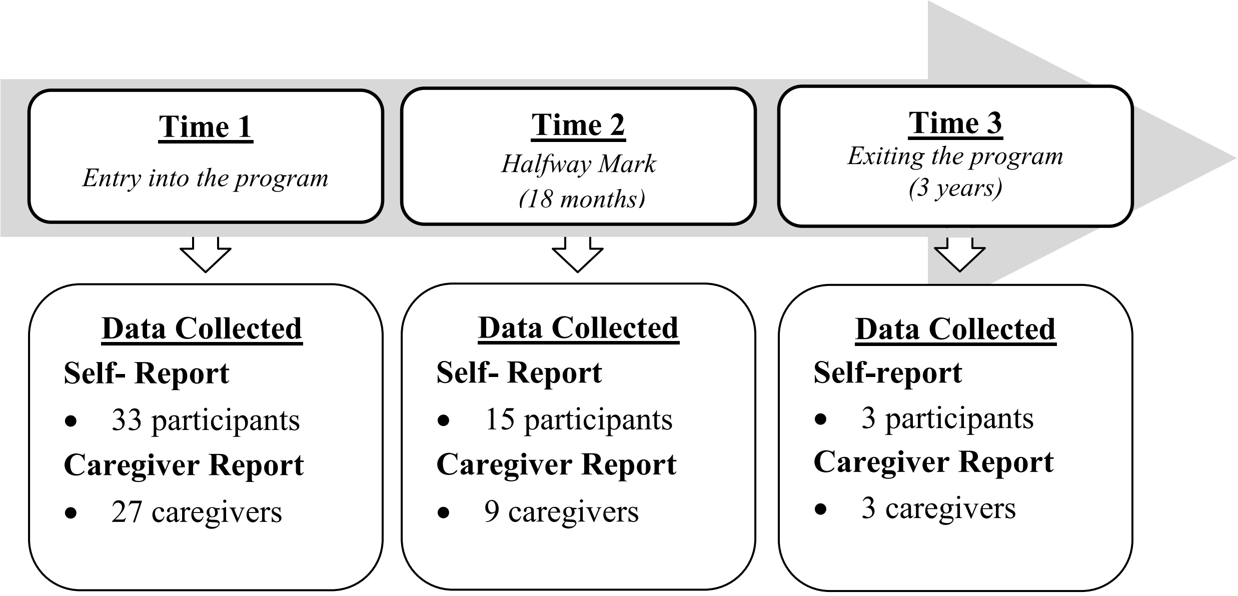

Figure 1. Schematic representation of data collection for current study.

Table 1. *Participant Characteristics*

Participant Characteristics	Adolescent (n=15)	Caregiver (n=9)
Age in years (M [range])		
Time 1	16.2 (13.5-19)	
Time 2	17.6 (15-20.5)	
Time 3	18 (17-19)	
Length of Intervention (years) (M [range])	1.6 (0.9-2.9)	
Sex [n female (%)]	10 (66.7%)	8 (88.9 %)
Diagnosis [N (%)]		
FASD	2 (13.3%)	
FAS	3 (20%)	
ARND	5 (33.3%)	
PAE	2 (13.3%)	
FAE	1 (6.7%)	
Unknown	2 (13.3%)	
Caregiver Characteristic [N (%)]		
Parent		1 (11.1%)
Grandparent		1 (11.1%)
Stepparent		1 (11.1%)
Foster parent		1 (11.1%)
Adoptive Parent		1 (11.1%)
Guardian		1 (11.1%)
Living-in caregiver		1 (11.1%)
Unknown		1 (11.1%)

Intervention

Mentoring Program. The McDaniel Mentoring program design is based on the Parent–Child Assistance Program model (PCAP). PCAP is an evidence-based home visitation program for high-risk women with the primary aim to prevent future alcohol and drug exposed births (Grant, Ernst, Streissguth, & Stark, 2005). In order to achieve this goal, the program employs case managers or mentors who develop positive and empathic relationships with these women. They also assist them in obtaining alcohol and drug treatment and staying in recovery, as well as linking them with community services and supports that "will help them build healthy, independent lives" (Grant et al., 2005 p.473). The women are involved in the program for three years as researchers have shown that this allows enough time for the change process to occur

(Rasmussen et al., 2012). After this period of time, the community connections that will have been built during the program will service as long-term supports and will allow the women to live independently. The PCAP model shows effectiveness in reducing alcohol or drug exposed births, as well as increasing maternal employment, more permanent child custody placements and increased connections to services. These outcomes are said to help women build healthy and productive lives, improve the quality of home environments and reduce the burden on society and economic systems (Grant et al., 2005).

As a result of these positive outcomes, the McDaniel Youth Program was designed to reflect the effectiveness of the PCAP model. As these adolescents often face adverse outcomes including trouble with the law, alcohol/drug use, inappropriate sexual behaviours and mental health problems, the program was designed to provide supports to these individuals and help them transition into adulthood and independent living more easily.

Based on previous research within the field of mentoring, goal setting was included as an important concept within the program. Goal setting can be empowering for the mentee as well as for the mentoring relationship (DuBois & Karcher, 2014). Within the McDaniel Youth Program the youth are encouraged to set their own goals while the mentors provide support and encouragement in order to create collaboration and to build towards a strong mentoring relationship. The relationship between the mentee and the mentor is considered to be the main focus of the program and the majority of the time in the program is therefore spend on building supportive and empathic relationships.

Mentors. Mentors are assigned upon enrollment based on gender and caseload. Preference is given to same sex mentor-mentee partnerships, however, as a result of limited male mentors, this is not always possible. On average, the program employs four mentors who each take on a caseload of eight to ten mentees. The mentors work one-on-one with their assigned mentees with the goal to build an empathic and supportive relationship, offer support in regards to goal setting, and provide connections to community supports. The mentor and mentee meet on a regular basis and are encouraged to contact each other once a week at minimum. Most mentors meet with their mentee on a weekly or bi-weekly basis to evaluate goals. These meetings often take place within the community to allow for a more natural setting. The program also organizing group events to which all mentee and mentors are invited. These events allow the adolescents to exchange experiences and help facilitate social skills exercises.

The mentors are paraprofessionals who have received extensive training in FASD and are aware of the difficulties and common characteristics faced by these youth. Many mentors hold post-secondary degrees or diplomas in areas such as psychology or have extensive experience in community programming. Before new mentors are assigned mentees, they are required to shadow an experienced mentor for a period of time in order to gain an understanding on the mentoring relationship and program. The McDaniel Youth Program has a high turn-over rate for their mentors which means that the mentoring relationship between the mentees and their mentors may not last the full three years in the program. Once a mentor leaves, a new mentor will be assigned to the mentee and the mentoring relationship will have to start over. This is an important factor to consider when examining the impact of the mentoring program as this may interfere with the overall effectiveness.

Measures

Demographics questionnaire. Caregivers or key youth workers completed a brief demographics form upon enrollment into the program. The questionnaire gathered information about the adolescent's age, FASD diagnosis, co-morbid diagnosis, their current and past alcohol/drug use, as well as their involvement with the law.

Mental Health. The Behavior Assessment System for Children, Second Edition (BASC-2) rating scale was used to assess the mental health of the participants (Reynolds & Kamphaus, 2004). The BASC-2 is a multidimensional system that can be used to evaluate social, emotional, and behavioral functioning and self-perceptions of children aged 2-21 years (Reynolds & Kamphaus, 2004). The BASC-2 includes a Teacher Rating Scale (TRS), a Parent Rating Scale (PRS), and a Self-Report of Personality (SRP) to assess an individual's behaviour and feelings. For the purpose of the current study, the PRS and the SRP were used. The appropriate BASC-2 forms were administered to the participants and their caregivers at three different times throughout the intervention in order to collect pre-, interim, and post-intervention data.

The items on the PRS forms are written at a fourth grade reading level and use a four point likert response scale (Never, Sometimes, Often, and Almost Always). The rating scale includes the following composite scales: Externalizing Problems (Hyperactivity, Aggression, and Conduct Problems), Internalizing Problems (Anxiety, Depression, and Somatization), Behaviour Symptom Index (Atypicality, Withdrawal and Attention Problems), and Adaptive Skills (Adaptability, Social Skills, Leadership, Activities of Daily Living, and Functional Communication).

The adolescent SRP forms (ages 12-21) consists of four point likert scale questions in addition to True/False items which are all written at a third grade reading level. The SRP includes five composites: School Problems (Attitude to School, Attitude to Teachers, and Sensation Seeking), Internalizing Problems (Atypicality, Locus of Control, Social Stress, Anxiety, Depression, Sense of Inadequacy, and Somatization), Inattention/Hyperactivity (Attention Problems, and Hyperactivity), Emotional Symptoms (Social Stress, Anxiety, Sense of Inadequacy, Depression, Self-Esteem, and Self-Reliance), and Personal Adjustment (Relationship with Parents, Interpersonal Relations, Self-Esteem, and Self-Reliance). Each rating scale also includes validity checks to detect untruthful or biased responding and to help examine the overall quality of the completed forms.

The scores for both rating scales are compared against standardized norms collected between 2002 and 2004 in the United States. Separate norms are available based on age and gender. Raw scores are converted to T-scores and percentile ranks and high scores on clinical scales (anxiety, depression, somatization, conduct problems, etc.) and low scores on adaptive scales (relationship with parents, adaptability, functional communication, etc.) indicate problems and poor functioning. T-score between 41 and 59 are considered to fall within the average range whereas scores above or below that can be classified as at-risk or clinically significant.

The BASC-2 shows good mean internal-consistencies (.80s to .90s for composites) as well as good test-retest reliabilities (ranging from .70s to .90). Lastly, acceptable levels of interrater reliabilities were also found for parent forms. In addition to good reliability the BASC-2 also shows evidence of acceptable construct-validity and concurrent-validity with other behavioural systems (e.g. Conners). The psychometric properties are weaker for the SRP in comparison to the PRS but can still be considered acceptable.

Data Analysis

Upon collection of the data, raw scores for the BASC-2 SRP and the BASC-2 PRS were entered into the BASC-2 computer scoring program by research assistants associated with the University of Alberta research team. The raw scores were then converted to T-scores based on available standardization data. Relevant data from the forms (e.g. raw scores, T-scores) as well as coded information from the demographic questionnaire were then transferred into a SPSS data file.

To answer the first research question, a paired *t*-test was conducted in order to determine the difference between self-report pre (upon enrollment in the program) and interim data (halfway through the program). A similar analysis was conducted on the caregiver report data in order to determine the perceived impact for this group. In order to answer the second research question a one-sample *t*-test was conducted to determine the difference between adolescent and caregiver data compared to the normative sample. In addition, paired *t*-tests were used to determine the difference between self-report and caregiver report for both data collection points. Since the two forms are not identical to each other this analysis was only run on common scales including anxiety, atypicality, depression, somatization, attention problems, and hyperactivity. In this analysis the report of adolescents is compared to that of their caregivers. In order to make this comparison nine sets of data were used. When data was collected from both the adolescent as well as their corresponding caregiver this was considered a set of data. Only sets of data were used for this comparison as it allows for an analysis of the difference between responses from two raters when rating the mental health functioning of the same individual.

The hypothesis of the second research question also indicated that the difference between self and caregiver report will become smaller throughout the duration of the program. No formal analysis was run for this hypothesis due to the small sample size, however, trends were visually analyzed in order to determine this difference.

Across all analyses, T-scores were used as they reflect the standardization data used for the BASC-2. In the absence of a control group, this allows for a comparison between the scores obtained in the study and the normative sample.

CHAPTER FOUR

Results

This study fits within a mentoring program aimed to diminish the adverse life outcomes faced by adolescents with FASD. The goals of the present study were to: 1) examine the impact of the mentoring program on the mental health of adolescents with FASD through self-report and caregiver report, and 2) investigate the difference between these perceptions, both at program entry and at program midpoint.

Research Question 1

The first question asked what the perceived impact of a mentoring program is on the mental health problems faced by adolescents with FASD according to self- and caregiver report. I hypothesized that the self-report would show an overall improvement in mental health for adolescents with FASD. Based on previous mentoring research greater improvements were expected for self-esteem, depression, sensation seeking, interpersonal relationships, attitude to school, and relations with parents. The results of the paired *t*-test on pre and interim self-report data, show no significant impact of the program on mental health as measured by the BASC-2 Self-Report of Personality (SRP) including school problems (p=0.85), internalizing problems (p=.423), emotional symptoms (p=.560), inattention/hyperactivity difficulties (p=.387), and personal adjustment problems (p=.953). Even though the results did not yield statistical significance, when examining specific areas of mental health functioning a decline in most clinical scales between pre and interim data was identified, including a decrease in sensation seeking, atypicality, social stress, depression, sense of inadequacy, inattention, and hyperactivity. In addition, an increase was found for interpersonal relations and self-reliance. These results support the initial hypothesis as they highlight trends of improvement for mental health functioning.

Lastly, the analysis also showed a perceived decrease in the adolescent's relations with parents, and self-esteem as well as a slight increase in reported anxiety and somatization. These results are contrary to the hypothesis as they indicate a decline in mental health functioning in these areas. However, as with the positive change trends, these results are not considered to be statistically significant.

Table 2. *BASC-2 SRP Mean T-scores*

BASC-2 SRP	Pre-	Interim	Diff.	*p*
School Problem Composite	58.07	54.80	3.27	.085
Attitude to School	54.67	54.60	0.07	.982
Attitude to Teachers	51.67	48.80	2.87	.209
Sensation Seeking	59.60	55.93	3.67	.114
Internalizing Composite	53.00	50.73	2.27	.423
Atypicality	55.60	50.47	5.13	.086
Locus of Control	56.07	53.47	2.60	.348
Social Stress	52.93	50.20	2.73	.192
Anxiety	51.20	51.60	-0.40	.891
Depression	50.67	49.20	1.47	.601
Sense of Inadequacy	52.40	48.47	3.93	.180
Somatization	51.20	52.60	-1.40	.603
Emotional Symptoms Index	50.53	49.00	1.53	.560
Inattention/Hyperactivity Composite	54.00	51.67	2.33	.387
Attention Problems	53.73	52.13	1.60	.529
Hyperactivity	52.73	50.60	2.13	.457
Personal Adjustment Composite	48.13	48.27	-0.13	.953
Relations with Parents	47.40	45.73	1.67	.508
Interpersonal Relations	45.07	47.20	-2.13	.237
Self-Esteem	50.07	48.87	1.20	.668
Self-Reliance	51.07	51.60	-0.53	.873

Clinical scale (School Problem Composite, Internalizing Composite, Emotional Symptoms Index, and Inattention/Hyperactivity Composite) scores of T> 60 are considered *At-Risk.*

Adaptive scale (Personal Adjustment Composite) scores of T<40 are considered *At-Risk.*

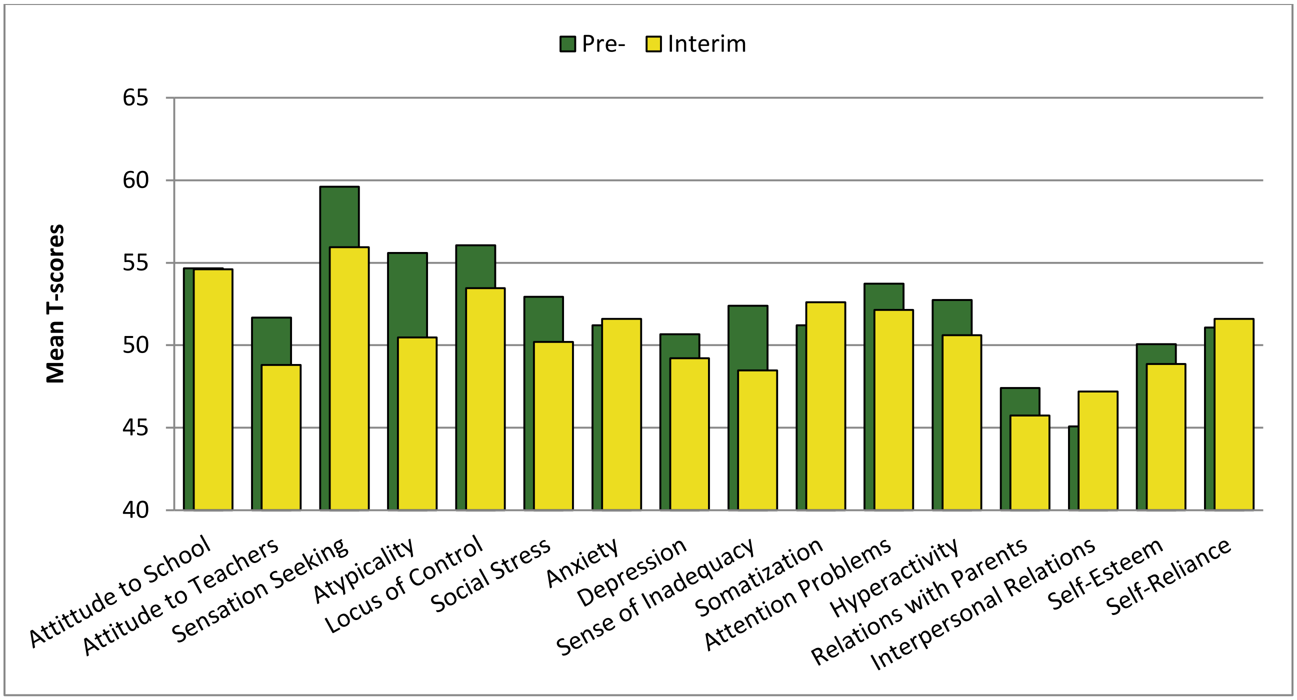

Figure 2. BASC-2 SRP Mean T-scores Pre- and Interim Comparison

Clinical scale (Attitude to School, Attitude to Teachers, Sensation Seeking, Atypicality, Locus of Control, Social Stress, Anxiety, Depression, Sense of Inadequacy, Somatization, Attention Problems, and Hyperactivity) scores of T> 60 are considered *At-Risk*.

Adaptive scale (Relations with Parents, Interpersonal Relations, Self-Esteem, and Self-Reliance) scores of T<40 are considered *At-Risk*.

In addition to the self-report data, the perceived impact of the mentoring program on the mental health of adolescents with FASD as reported by their caregivers was also analyzed. I hypothesized that the results would show an overall positive impact on the mental health functioning of the participants as perceived by their caregivers. A positive impact was expected on both the clinical as well as the adaptive scales and greater improvements were expected for aggression and depression based on previous mentoring research. No statistically significant results were found when examining the difference between pre- and interim data collected from the caregivers using a paired *t*-test. The caregivers noted an improvement of certain mental health aspects as shown by a decreased t-score in hyperactivity, aggression, conduct problems, depression, atypicality, withdrawal, and attention problems. In accordance with the self-report, the caregivers also noted a slight increase in anxiety and somatization. As for the adaptive scales, positive results were seen through an increase in perceived social skills, leadership abilities, activities of daily living, and functional communication. However, as stated above these results are not statistically significant.

Table 3. *BASC-2 PRS Mean T-scores*

BASC-2 PRS	Pre-	Interim	Diff.	*p*
Externalizing Problems Composite	69.56	64.89	4.67	.196
Hyperactivity	69.00	61.67	7.33	.145
Aggression	67.33	62.22	5.11	.167
Conduct Problems	59.44	58.22	1.22	.719
Internalizing Problems Composite	65.67	67.11	-1.44	.760
Anxiety	59.11	63.00	-3.89	.285
Depression	68.11	66.56	1.56	.771
Somatization	63.22	63.89	-0.67	.855
Atypicality	67.56	59.44	8.11	.061
Withdrawal	67.33	66.22	1.11	.775
Attention Problems	63.33	62.44	0.89	.787
Behaviour Symptom Index	73.89	69.33	4.56	.309
Adaptive Skills Composite	32.33	32.89	-0.56	.867
Adaptability	35.78	35.22	0.56	.864
Social Skills	40.00	42.67	-2.67	.257
Leadership	36.56	39.33	-2.78	.277
Activities of Daily Living	34.44	34.78	-0.33	.935
Functional Communication	35.67	36.00	-0.33	.932

Clinical scale (Externalizing Problems Composite, Internalizing Composite, and Behavior Symptom Index) scores of T> 60 are considered *At-Risk.*

Adaptive scale (Adaptive Skills Composite) scores of T<40 are considered *At-Risk.*

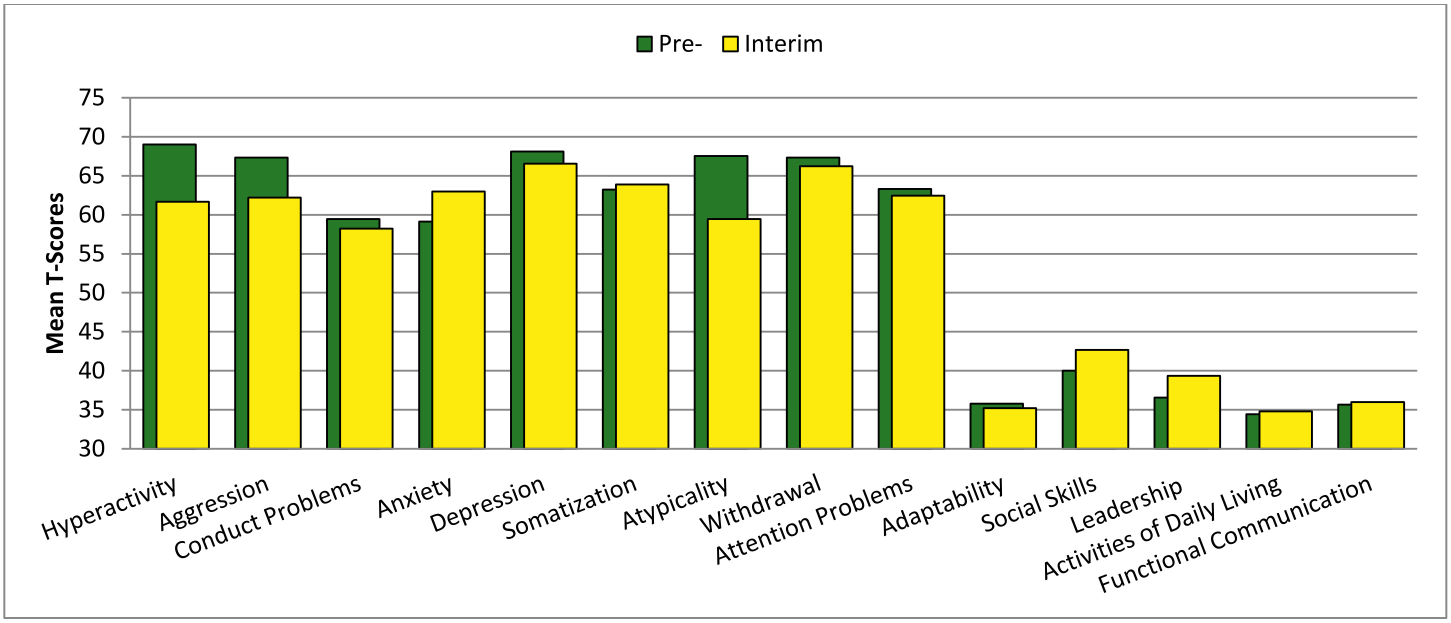

Figure 3. BASC-2 PRS Mean T-scores Pre- and Interim Comparison

Clinical scale (Hyperactivity, Aggression, Conduct Problems, Anxiety, Depression, Somatization, Atypicality, Withdrawal, and Attention Problems) scores of T> 60 are considered *At-Risk*.

Adaptive scale (Adaptability, Social Skills, Leadership, Activities of Daily Living, and Functional Communication) scores of T<40 are considered *At-Risk*.

Research Question 2

The second research question aimed to examine the difference between self-report and caregiver report on mental health difficulties faced by adolescents with FASD. It was hypothesized that the self-report of adolescents would differ significantly from the report provided by their caregivers. Specifically, it was suspected that the adolescents would underreport mental health difficulties and that caregivers would indicate higher levels concern across all areas of mental health functioning.

In order to answer this question, the data collected from both the adolescents as well as their caregivers upon entry into the program were examined. First, the T-scores from all subscales (clinical and adaptive scales) of the self-report data were compared to the norm mean of 50 using a one-sample *t*-test. This analysis showed no statistically significant difference between the self-report data and the normative sample on all but one area of mental health functioning. The results indicated a significant difference between the norm and the collected self-report data on sensation seeking (*p*=0.002). On average, the responses provided by the adolescents fell in the average range indicating no concerns about their mental health functioning. This is consistent with the hypothesis indicating that adolescents tend to underreport mental health difficulties.

Table 4. *BASC-2 SRP & Normative Sample Mean T-score Comparison*

BASC-2 SRP & Normative Sample Comparison

	Normative Sample	SRP	*Pre-* *p*
Attitude to School	50.00	54.66	0.108
Attitude to Teachers	50.00	51.66	0.594
Sensation Seeking	50.00	59.60	0.002*
Atypicality	50.00	55.60	0.131
Locus of Control	50.00	56.06	0.067
Social Stress	50.00	52.93	0.371
Anxiety	50.00	51.20	0.677
Depression	50.00	50.66	0.817
Sense of Inadequacy	50.00	52.40	0.393
Somatization	50.00	51.20	0.722
Attention Problems	50.00	53.73	0.212
Hyperactivity	50.00	52.73	0.426
Relations with Parents	50.00	47.40	0.365
Interpersonal Relations	50.00	45.06	0.169
Self-Esteem	50.00	50.06	0.979
Self-Reliance	50.00	51.06	0.712

*$p < 0.05$

Clinical scale (Attitude to School, Attitude to Teachers, Sensation Seeking, Atypicality, Locus of Control, Social Stress, Anxiety, Depression, Sense of Inadequacy, Somatization, Attention Problems, and Hyperactivity) scores of T> 60 are considered *At-Risk.*

Adaptive scale (Relations with Parents, Interpersonal Relations, Self-Esteem, and Self-Reliance) scores of T<40 are considered *At-Risk.*

An additional one-sample *t*-test, using the mean T-scores of all subscales, was conducted in order to determine the difference between the normative sample and the caregiver data collected upon entry into the program. This analysis indicated statistically significant differences in all areas of mental health functioning with the exception of somatization (*p*=.082). On average, the responses provided by the caregivers fell in the at-risk range across subscales, indicating concerns about the mental health functioning of the youth.

Table 5. *BASC-2 PRS & Normative Sample Mean T-score Comparison*

BASC-2 PRS & Normative Sample Comparison		*Pre-*	
	Normative Sample	PRS	*p*
Hyperactivity	50.00	69.00	.001*
Aggression	50.00	67.33	.006*
Conduct Problems	50.00	59.44	.002*
Anxiety	50.00	59.11	.012*
Depression	50.00	68.11	.010*
Somatization	50.00	63.22	.082
Atypicality	50.00	67.56	.001*
Withdrawal	50.00	67.33	.001*
Attention Problems	50.00	63.33	.000*
Adaptability	50.00	35.78	.001*
Social Skills	50.00	40.00	.018*
Leadership	50.00	36.56	.000*
Activities of Daily Living	50.00	34.44	.001*
Functional Communication	50.00	35.67	.000*

*$p < 0.05$

Clinical scale (Hyperactivity, Aggression, Conduct Problems, Anxiety, Depression, Somatization, Atypicality, Withdrawal, and Attention Problems) scores of $T > 60$ are considered *At-Risk.*

Adaptive scale (Adaptability, Social Skills, Leadership, Activities of Daily Living, and Functional Communication) scores of $T<40$ are considered *At-Risk.*

In order to then examine the difference between the data collected from the adolescents and caregivers upon entry into the program, a paired *t*-test was conducted on the following common subscales used in both rating scales: atypicality, anxiety, depression, somatization, attention problems, and hyperactivity. Significant differences were identified between caregiver and self-report on atypicality ($p= .013$), depression ($p= .009$), somatization ($p= .043$), and hyperactivity ($p= .032$) for pre- intervention data with caregivers indicating more concerns in these areas then the adolescents. As indicated previously, nine sets of data were used for this analysis, in order to examine the difference in responses provided by adolescents and their caregivers when rating the mental health of the same individual.

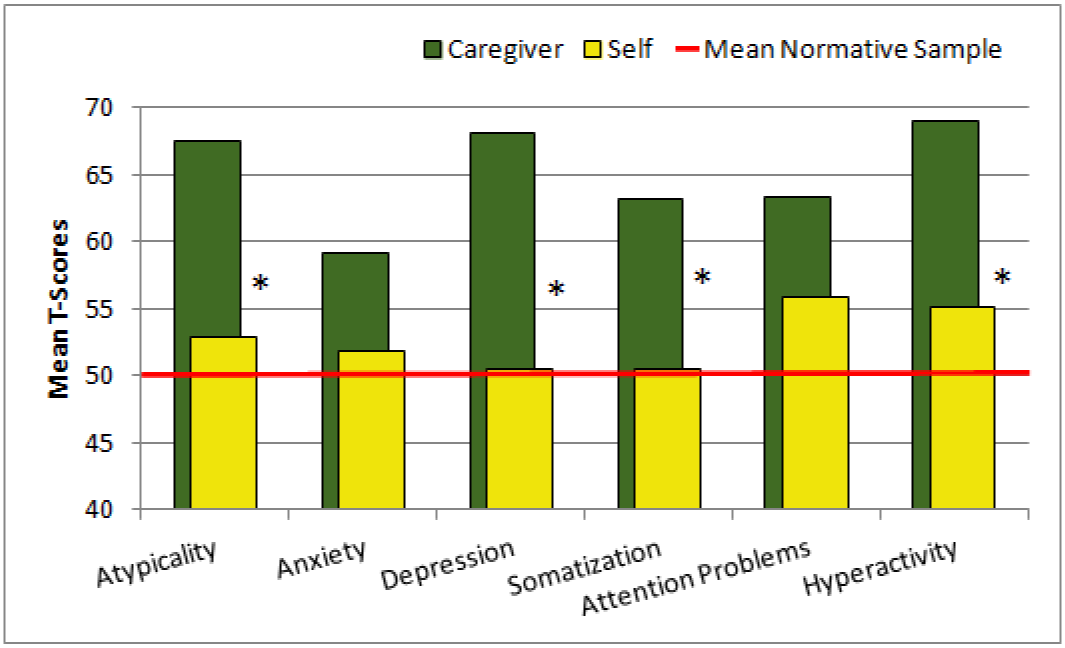

Figure 4. BASC-2 SRP & PRS Mean T-score Comparison Pre Intervention Data
Clinical scale (Atypicality, Anxiety, Depression, Somatization, Attention Problems and Hyperactivity) scores of T> 60 are considered *At-Risk*.

It was also hypothesized that the difference between self and caregiver report would become smaller throughout the duration of the program as caregivers were expected to see more change due to the program impact. Adolescents were expected to have developed a more "realistic" perception of their mental health problems, therefore reporting the same, or even more areas of concern. As a result, the difference between self and caregiver report for interim data (18 months in the program) was first examined. In order to do so, the common subscales between the sets of data (nine self-reports and nine caregiver reports) collected at 18 months were compared using a paired *t*-test. This analysis showed a statistically significant difference for interim data on depression (*p*=.004) and hyperactivity (*p*=.004) with caregivers rating these difficulties as more severe. This is in line with the earlier stated hypothesis, noting a smaller difference between the two sources halfway through the program as only two subscales rate as significant compared to four subscales for pre- data. It should also be noted that the self-report data shows an increase in anxiety, depression, and somatization from pre to interim data.

Table 6. *BASC-2 SRP & PRS Mean T-score Comparisons*

BASC-2 SRP & PRS Comparisons

	Pre-				*Interim*			
	PRS	SRP	Diff.	*p*	PRS	SRP	Diff.	*p*
Atypicality	67.56	52.89	14.67	.013*	59.44	52.00	7.44	.143
Anxiety	59.11	51.78	7.33	.058	63.00	57.22	5.78	.105
Depression	68.11	50.44	17.67	.009*	66.56	53.22	13.33	.004*
Somatization	63.22	50.56	12.67	.043*	63.89	55.89	8.00	.079
Attention Problems	63.33	55.89	7.44	.111	62.44	55.00	7.44	.103
Hyperactivity	69.00	55.11	13.89	.032*	61.67	54.00	7.67	.004*

*$p < 0.05$

Clinical scale (Atypicality, Anxiety, Depression, Somatization, Attention Problems and Hyperactivity) scores of T> 60 are considered *At-Risk*.

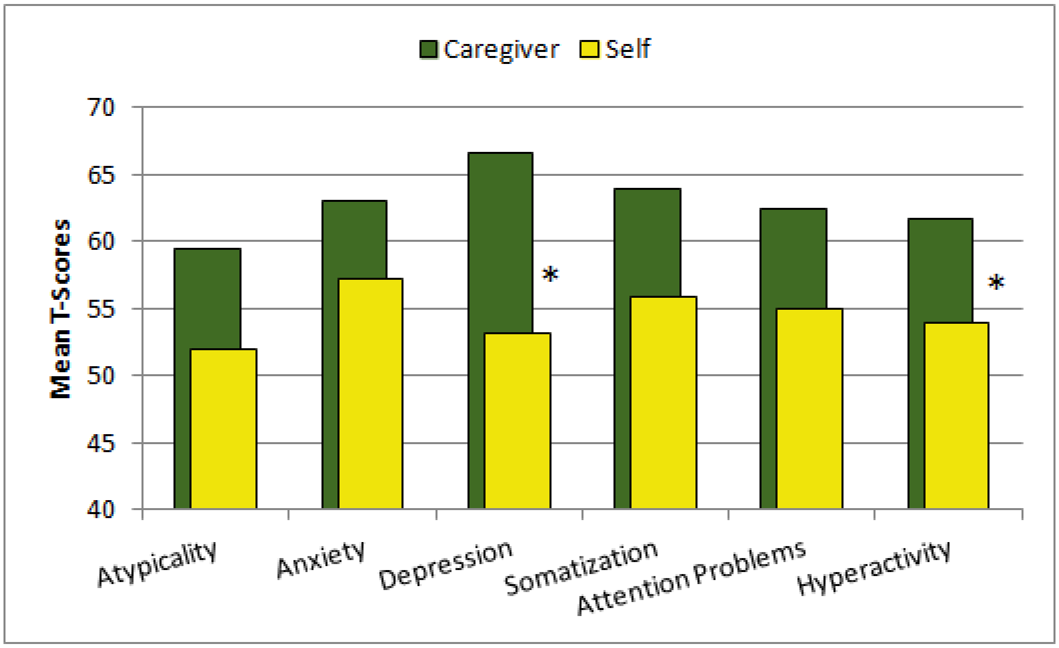

Figure 5. BASC-2 SRP & PRS Mean T-Score Comparison Interim Data

Clinical scale (Atypicality, Anxiety, Depression, Somatization, Attention Problems and Hyperactivity) scores of T> 60 are considered *At-Risk*.

CHAPTER FIVE

Discussion

The purpose of this study was to determine the perceived effect of a mentoring program for youth with FASD. More specifically, the intent was to examine the perceived impact on mental health problems faced by these adolescents as this has been identified as the number one adverse life outcome for this population (Streissguth et al, 1996). The impact of the program was measured through both self-report and caregiver report as previous research indicates that adolescent self-report for these individuals may not be as reliable as a result of brain damage due to prenatal alcohol exposure. This study, therefore, also aimed to examine the difference in responses provided by self-report and caregiver report.

In this section, the results from the current study will be interpreted and discussed. In addition, the implications these results may have, as well as suggestions for future research will be highlighted. Lastly, the limitations found in this study will also be presented.

Perceived Impact of the Mentoring Program

Self-Report. The analysis on the impact of the mentoring program according to self-report, revealed no significant changes between the adolescent's perception of their mental health after completing 18 months in the program, as compared to before starting the program. That said, a decrease was noted in relation to the following clinical scales: sensation seeking, atypicality, social stress, depression, sense of inadequacy, inattention, and hyperactivity, however, this decrease did not yield statistical significance. Nonetheless, the results found for this research can be seen as valuable. Previous researchers have shown that mental health problems are the most commonly occurring adverse life outcome for individuals with FASD and these problems are said to increase as the individuals age (for a review see Pei et al., 2011). However, in this study a slight decline in several aspects of mental health problems is noted.

The program may therefore have prevented the outcomes from worsening and can potentially be seen as a stabilizing effect for mental health problems for youth with FASD. Komosa-Hawkins (2012) found similar results in her study examining the impact of a mentoring program on the social-emotional health of at-risk youth. She also indicated that the positive trends found in the mentoring study can be viewed as a buffering effect and that "mentoring is a promising practice for protecting youth from the risk associated with adolescence" (Komosa-Hawkins, 2012 p. 393). The study also shows the similarities in outcomes faced by both at-risk youth and youth with FASD. This goes to further support the notion that at-risk youth research and practices should be considered when looking to support youth with FASD. Overall, the Komosa-Hawkins' study as well as the current study highlight the potential of mentoring programs and the need for future research in this area.

When examining the results of the current study in more detail, the adolescents reported the biggest decline in their feelings of atypicality (e.g. odd behaviors, mood swings, bizarre thoughts) indicating less perceived atypical behavior halfway through the program. The McDaniel Youth Program offers group activities in which the participants are encouraged to reach out to one another and talk about their difficulties. Activities such as these might impact an individual's sense of atypicality as it might become evident that other adolescents with FASD tend to behave in similar ways (Rhodes, 2005). Talking about their difficulties with peers as well as with a mentor might help to normalize these behaviors. In addition, the mentoring theory in general highlights that changes in emotional wellbeing can be enhanced through offering youth escapes from daily stress and assistance with emotional regulation (Rhodes, 2005). Mentors in this program are encouraged to include these concepts in their work with the mentees which could positively impact the youth's perceptions of atypicality. Atypical behaviors may be related to stress or an inability to regulate emotions and the youth's perceptions of their atypicality may therefore be reduced once they learn how to cope and are exposed to stress relieving activities.

The adolescents also noted a larger decrease in sense of inadequacy (perception of being unsuccessful or inadequate) in comparison to the other concepts of mental health as measured by the BASC-2 SRP. This may be the result of the goal setting concept within the program as adolescents and mentors worked on areas of need as identified by the youth themselves. It is probable that the goal setting concept positively impacted the youth's sense of inadequacy as they slowly become more capable of solving problems and completing daily activities that they may otherwise struggle with (DuBois & Karcher, 2014). This also aligns nicely with the mentoring theory as this indicates that the relationship between the mentee and mentor can lead to positive identity development (Rhodes, 2005).

In addition to the positive changes, the results also indicate a decline in the youth's perceived relationship with their parents. Even though this result is not statistically significant it is important to discuss this decline as it is contrary to the goals of the mentoring program. One reason as to why the youth might note a decline in their relationship with their parents could be due to the fact that the program does not actively include parents or caregivers in the process. The program introduces the youth to a caring adult, the mentor, and they are encouraged to talk to this individual about any difficulties or concerns they may face. This may mean that the adolescents do not talk to their caregivers as much and may in turn feel a slight decline in their relationship with them. As the "best practices" for mentoring identified the involvement of the mentees' family as a strong predictor of positive program effect this will need to be considered when continuing with the McDaniel Youth Program or future programs (DuBois et al., 2006). As the true reason for this decline is unknown it is important that future research in this area is conducted.

A decline was also noted in self-esteem, contrary to the hypothesis as mentoring is said to positively influence the development of identity. This finding may, however, be the result of the youth aging as it is not atypical for youth to experience fluctuations in their self-esteem throughout adolescence (Robins & Trzesniewski, 2005). In addition, the results provided in this study are preliminary and the noted decline is relatively small, indicating that the impact of a mentoring program on the self-esteem of youth with FASD may be different when looking at data collected throughout the full three year program. However, it is very important to continue to examine the impact on self-esteem as previous research has established the potential for harm to the mentees' self-concept as a result of problems within mentoring programs (e.g. ending prematurely, difficulties between mentors and mentees, etc.) (Rhodes et al., 2006).

Lastly, an increase was also noted in the adolescent's reported anxiety and somatization (i.e., concerns about physical well-being). Interestingly, the same increase was reported according to the caregivers as they also noted that the adolescents appeared more anxious and showed an increase in somatic complaints (e.g. complaints about being sick, experiencing headaches, stomach aches, or pain etc.). Increased concerns regarding somatization can be an indication of an underlying emotional problem such as anxiety or depression for individuals who are reported to be in a healthy condition. As an increase in anxiety was noted by both adolescents and caregivers, this may indicate that the presence of anxiety difficulties may commence or increase throughout adolescence for individuals with FASD. The current findings are not statistically significant, however, they do indicate a negative trend towards increasing anxiety. It is therefore important to continue to examine the progression of these difficulties through the full mentoring program, as they may provide information for future research and practice with this population.

Caregiver Report. When examining the overall impact of the mentoring program according to caregivers, no statistical significance was noted in regards to changes in the adolescent's mental health functioning. Although not significant, an overall decline was noted in the mental health problems faced by the adolescents as reported by their caregivers. The literature on mental health for adolescents with FASD indicates that mental health difficulties are likely to increase throughout this developmental period, therefore the lack of increase and instead the presence of an overall decline can still be viewed as valuable information. As stated above, it may indicate a stabilizing effect on the mental health difficulties that are estimated to increase during adolescence as reported in the literature (Pei et al., 2011).

The caregivers noted declines in hyperactivity (e.g. being overly active, rushing, and acting without thinking), aggression (e.g. behaving aggressively including fighting, hitting, kicking, yelling etc), conduct problems (e.g. engagement in rule-breaking behavior, such as cheating, deception, and/or stealing), attention problems (e.g. being distracted and unable to concentrate), depression (e.g. feelings of unhappiness and sadness), withdrawal (e.g. avoiding social situations, difficulty developing and maintaining friendships) and atypicality (e.g. odd behaviors, mood swings, bizarre thoughts). The decline in these observed behaviors may be a direct result of the mentoring relationship. According to Rhodes (2005), change in a mentoring program occurs as a result of the relationship between the mentee and mentor. This relationship in turn positively influences social emotional functioning, cognition, and identity development, leading to positive changes in emotions and behaviors. According to the social learning theory, a mentoring relationship is able to influence the mentee as they can learn through observing the mentor (Bandura, 1986). Therefore, it is important that the mentor functions as a positive role model as observational learning will allow for the acquisition of positive behavioral patterns (Bandura, 1986).

In addition, the program allows for the direct teaching of social skills as well as coping strategies, which may also positively impact the adolescent's hyperactivity, aggression, and atypicality. However, it should be noted that this change may not be the direct result of the mentoring program. As stated above, the participants enrolled in the McDaniel Youth Program often have other support systems in place. These services might include parenting supports which could impact the way in which parents perceive and cope with their child with FASD and their behaviors such as hyperactivity and aggression.

Self-Report versus Caregiver Report

Entry Point Analysis. The difference between the perceptions of mental health functioning according to adolescents and caregivers was examined next. The hypothesis stated that the self-report would differ significantly from the report provided by the caregivers and that adolescents were suspected to underreport mental health difficulties. First, the data collected upon entry into the program was analyzed and the adolescents were found to report mental health functioning no differently than the normative sample consisting of same aged peers. This indicates that the adolescents do not perceive themselves as facing more difficulties with regard to mental health functioning as compared to their same aged peers. However, the adolescents did indicate significantly higher levels of sensation seeking in comparison to the normative sample. This indicates that the adolescents in the study perceive themselves to engage in risky behaviors more often than others their age and gender. This finding appears consistent with previous research indentifying youth with FASD to be more vulnerable to high risk behaviors (Rasmussen

& Wyper, 2007). It is also important to note that the adolescents did not rate themselves differently from the normative sample on all other scales including anxiety, depression, hyperactivity etc. Since the literature on adverse life outcomes for individuals with FASD (Streissguth et al., 2004; Pei et al., 2011) indicate that mental health difficulties are said to increase throughout adolescence, a finding such as this one might imply that the adolescents in the study are underreporting mental health difficulties.

There may be different reasons as to why adolescents would underreport these difficulties. First, research on adolescents with FASD indentifies a phenomenon called dysmaturity in which these youth experience difficulty with self-reporting as a result of brain injury (Malbin, 2000). Secondly, the adolescents might have consciously underreported their mental health difficulties as they are just being introduced to their mentor and may not yet feel comfortable sharing this information. As indicated in previous research (Carmichael Olson et al., 2009; Streissguth et al., 2004) these individuals are also at an increased risk of having experienced abuse or difficult relationships in their lives. This may have an influence on the way in which the adolescents will perceive a new relationship with their assigned mentor.

When the caregiver data collected upon entry into the program was compared to the normative sample, significant differences were found across all subscales with the exception of somatization. This means that compared to the normative sample, the caregivers indicated higher levels of concerns with regards to the adolescents' mental health functioning. This finding is consistent with the literature stating that mental health difficulties will increase throughout adolescence for youth with FASD.

When data collected upon entry from self-report was compared to caregiver report a significant difference was identified with caregivers reporting higher levels of atypicality, depression, somatization and hyperactivity. This finding further supports the notion that adolescents in this study may be underreporting the mental health difficulties.

Midpoint Analysis. Additionally, it was hypothesized that the difference between the two reports would become smaller throughout the duration of the program. The difference between the caregiver report and self-report for pre-intervention data as well as interim data needed to be examined. These analyses show that after 18 months in the program, the difference between the two reports becomes smaller.

The change in gap between the two groups, over time, might be explained in three ways: change in caregiver report, change in adolescent report, or both – and in this case it appears to be both. It was hypothesized that both group perspectives would change as caregivers were expected to indicate a decrease in mental health concerns and adolescents were expected to have developed a more "realistic" perception of their mental health problems therefore reporting the same or perhaps even more areas of concern. Caregivers indeed reported less concerns in regards to the mental health functioning of the adolescents upon 18 months in the program. Adolescents were noted to report a slight increase in anxiety, depression, and somatization therefore minimizing the gap between the two reports. The change in response by the adolescents might be the result of increasing reporting accuracy as discussed previously. That said the possibility of increasing difficulties cannot be ignored and will need to be considered in future research as it could be that some areas of difficulty are improved, but others become truly worse – in which case close examination of reasons and ways to address would be needed.

Overall, these findings are important to consider when conducting further research with this population as it shows a clear difference in responding between adolescents and their caregivers. This indicates the need for a supplemental source of information in addition to self-report data to allow for a more complete picture of the mental health functioning of adolescents with FASD.

Overall, the results found in this study fit well within the existing research on mentoring including a stabilizing or buffering effect on aspects of mental health functioning (Komosa-Hawkins, 2012) as well as the potential success of included concepts such as goal-setting, group activities, and connections to additional community resources (DuBois & Karcher, 2014; Grant et al., 2005). Mentoring can therefore be considered as a promising intervention against mental health difficulties for adolescents with FASD.

Limitations and Future Directions

Although the results found in this study can be viewed as promising, there are several limitations that exist with respect to both study design and program implementation. First, the study design may not have allowed for enough time for the analysis to show the full impact of the study. Previous research indicated that a mentoring program of three years is long enough to allow for change to occur in the participants (Rasmussen et al., 2012). The McDaniel Youth Program was therefore designed as a three year program. However, at this point in time, data was only available for this study from the first 18 months of the program as a result of high drop-out rates. This may indicate that the study design did not allow for enough time in the program for significant levels of change to occur. Going forward, extending the study to include data collected in the full three years of the McDaniel Youth program might allow for further change to occur in the adolescents.

A second limitation to this study is the size of the participant groups. With only 15 adolescents and nine caregivers the numbers of the study are limited and may not allow for enough statistical power. The positive trends that were found with the current number of participants can therefore be considered as enticing preliminary findings.

It should also be noted that the adolescents enrolled in the McDaniel Youth Program are often referred by other supporting agencies, indicating that these youth may already have more access to community services than is typical for this population. In this study, underreporting is considered as a possible explanation for the fact that the adolescents enrolled in the program indicate no mental health problems. It is, however, also possible that the participating youth do not have mental health problems or are already receiving supports and services for their difficulties through the additional community services they may be exposed to.

This study was not designed to be experimental which does not allow for cause and effect interpretations. In order to determine the full impact of a mentoring program on the mental health difficulties faced by adolescents with FASD, a study with a control group will be needed. This, however, would be very difficult as it would be unethical to divide at-risk adolescents between an intervention group and a control group. A design in which the mentoring intervention is compared to a different intervention might allow for a better comparison. This way the participants in both groups can be matched on age and gender in order to control for aging effects.

Lastly, as the mentor-mentee relationship is central to this type of intervention this can also influence the results of the study. The program employs several mentors who may not all have similar relationships with their mentees. A larger participant group may eliminate the impact of this on the data in future research projects, allowing for an increase of statistical power. In addition, a closer examination of the relationship between the mentee and mentor is encouraged in future research. Specifically the time spend together may impact the results of the program. The mentors in the McDaniel program are encouraged to meet with their mentees on a weekly or bi-weekly basis, however, the amount of time together was not considered as a factor in the current study. Additional research is needed to determine the approximate amount of time spend together between a mentor and mentee that will allow for optimal results.

Implications and Conclusions

The study set out to examine the perceived impact of a mentoring program on the mental health difficulties faced by adolescents with FASD. The analysis showed no significant change in mental health problems faced by the adolescents as indicated by self-report and caregiver report. However, positive trends were identified highlighting the possibility of change occurring and indicating a stabilizing effect of mentoring on the mental health of adolescents with FASD. In addition to the positive trends, an increase was noted in reported levels of anxiety and somatization. As this increase was reported by both adolescents and caregivers, it is recommended that further research is conducted to examine this area of concern for adolescents with FASD.

This study also aimed to examine the difference between self and caregiver report as previous research indicated a difference in reporting between these two sources. Adolescents were found to underreport their mental health difficulties, which could be the result of a difficulty with self-reflection due to brain injury. As stated earlier, individuals with FASD are at an increased risk of having experienced trauma through abuse or neglect and this may impact the way in which they are able to form new relationships, for example with their assigned mentor. Adolescents may not feel comfortable sharing information about their mental health functioning with their mentor upon entry into the program. It is therefore important that this is taken into consideration when working with this population.

The difference between self and caregiver report was also noted to become smaller throughout the duration of the program. Caregivers were observed to report a decrease in mental health problems as a result of the program and adolescents were observed to note an increase of areas of concern therefore minimizing the gap between the two reports. This may be due to a combination of caregivers noticing a bigger decrease in the problems faced by the youth as well as the youth developing a more "realistic" perception of their mental health functioning as they mature, or as they become more comfortable in their relationship with their mentor allowing for more accuracy in their responses.

The identified potential for change, the stabilizing effect, and the difference between self and caregiver report, allow for several implications in both research and practice with this population. First, the current results can be considered as very enticing as this study included both a high risk population as well as high risk problems such as mental health. A positive trend such as the one found can therefore be seen as very valuable as it highlights the value of interventions for this population. The results found in this study therefore provide preliminary support for the development of more programming and services for adolescents with FASD. Even though further research is needed on the causal relationship between mentoring and mental health, the current study highlights the importance of a caring individual in the lives of adolescents with FASD and possibility that the measured change is a result of the relationship formed between the mentor and mentee. The inclusion of such a relationship is therefore recommended in future programs.

In addition to the mentor-mentee relationship other components of the current program should also be considered when developing future programs. For example, the inclusion of goal-setting, group activities, and the strong connection to additional community resources for both the individuals as well as the family were highlighted as potential positive influences on the results of this study.

Lastly, this study also highlights the need for multiple sources of information when conducting research or when working with adolescents with FASD. The analysis conducted showed a significant discrepancy between the perceptions of mental health for adolescents and their caregivers. As dysmaturity can be part of the FASD presentation during adolescence this likely impacts the reliability of self-report data for this population. This absence of awareness or a difficulty with self-reflection should therefore be considered when working with youth with FASD and may be a point of intervention to consider for future research and practice.

In conclusion, this study shows the potential for change with this population. Early intervention and programming for school-aged children are important, however, this study highlights the importance and the potential effectiveness of programming and supports during the adolescent years. This will hopefully lead to more supports and services for these adolescents as the literature clearly defines the need for interventions for this age group (Paley & O'Conner, 2011). The positive trend found in this study will hopefully aid in the development of new programs and the continuation of research on adolescents with FASD. Overall, the results indicate that it is never too late to intervene as change is always possible.

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