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Predictive Relationship Between Anger and Violence in Canadian Secondary Students

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Walden University
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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Psychology

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Abstract

Violence among Canadian secondary students remains a concern for administrators,

teachers, community members, and students. The purpose of this retrospective

quantitative nonexperimental study was to examine the predictive relationship between

anger and violence among secondary students in Canada using the Anger Regulation and

Expression Scale (ARES). The general aggression model provided the framework for the

study. Survey data were collected from 138 students using the ARES. Demographic data

and archival data from students' school files were also collected. Results of receiver

operator characteristic analysis and binary logistic regression indicated that the ARES

total score provided fair to good predictive ability to differentiate between violent and

nonviolent students. Only the externalizing cluster indicated a statistically significant

relationship between anger and violence. Results also indicated that female and Asian

students had lower odds of perpetrating violence. Results may help educators reduce the

risk of violence through early detection of potentially violent youths and the provision of

intervention and support.

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Chapter 1: Introduction to the Study

Background

In the United States and Canada, violent behavior perpetrated by adolescents has continued to be a concern as evident by the increased percentage of schools with security staff and law enforcement officers on campuses (Musu-Gillete et al., 2018). Although rates of violence have gone down over the past few decades, mass killings at public schools have perpetuated public uneasiness about the problem (Musu-Gillete et al., 2018). The role of forensic psychologists in the assessment of violent behavior has become a priority as people look to answer questions about youth's risk for future violence. The use of risk assessment increased over 50% from 1990 to 2003 (Schwalbe, 2007). Modern risk assessment measures evaluate factors associated with violent behaviors and provide risk rating based on factors in the individual's profile (Hilterman, Nicholls, & van Nieuwenhuizen, 2014).

This study addressed the predictive relationship between anger and violence in secondary students in Canada. Although correlations between anger and violence have been noted in previous studies (Chereji, Pintea, & David, 2012; Kimonis, Ray, Branch, & Cauffman, 2011; Roberton, Daffern, & Bucks, 2014), little research has been done in the educational setting. Additionally, no literature exists on the Anger Regulation and Expression Scale (ARES) regarding its empirical effectiveness when used for predictive purposes. Findings from this study may be used to increase student and staff safety through early identification of students with a higher propensity for aggression given

their rates of anger. Findings may also be used to provide education and treatment interventions for at-risk youths.

Chapter 1 provides the framework of the study including the background, problem statement, purpose, research questions, hypotheses, and theoretical framework. Chapter 1 also includes the nature of the study and a list of important definitions. Lastly, the chapter presents the assumptions, scope, delimitations, limitations, and significance of the study.

Problem Statement

Youth violence in American school systems has been an area of increasing concern over the past two decades (Musu-Gillette et al., 2017). According to the Zhang, Musu-Gillette, and Oudekerk, (2016), approximately 966,000 nonfatal violent victimizations took place in the U.S. schools in 2013. The hope that Schools are safe places for kids has been marred not only by the increased media coverage and sensationalized news stories of violent acts in the educational communities, but also by recent school safety statistics that revealed that youth victimization rates were higher at school (55 victimizations per 1000 students) than in the community (30 victimizations per 1000 students) (Zhang et al., 2016). Although there has been a downward trend of aggressive and violent acts in schools in North America over the past two decades (Kann et al.; Zhang et al., 2016), there has been an increase (4.4%-6.7%) in the number of children who reported missing school because of perceived safety concerns from 1993 to 2017 (Kann, 2017); 6.7% is equivalent to roughly 930,000 students. To make parents and students feel safer while decreasing community fear, school administrators have sought to understand the potential risks their students have for behaving violently (Cornell & Allen,

2011). The need to mitigate potential risk, the desire to protect students, and the need to limit liability have led to increased assessment of students' risk for future violence (Reddy, Borum, Bergulund, Vossekuil, Fein & Modzeleski, 2001). Given the increased use of assessment, it seems pertinent to continue to understand the psychometric properties of the tools that psychologists are choosing to use to evaluate risk for aggressive and violent behavior in students.

The Structured Assessment of Violent Risk in Youth (SAVRY) is one of the most widely used and effective instruments for assessing risk for violent behavior in adolescence (Childs, Frick, Ryals, Lingonblad, & Villio, 2014; Hilterman, Nicholls, & van Nieuwenhuizen, 2013). However, the SAVRY, like other risk assessment tools, is most often used after a youth has been referred for evaluation following a violent or aggressive act (Burman, Armstrong, Batchelor, NcNeill, Nicholson, 2007) . In other words, the SAVRY is used in a reactive rather than proactive fashion. There has been little research done on the proactive assessment of aggression and violence, particularly within the educational system. One area that has been considered is the assessment of anger in predicting aggression. The construct of anger and its relationship to aggression has been researched in forensic, clinical, and nonclinical populations (Etzler, Rohrmann, Brandt, 2014; Kimonis et al., 2011; Lievaart, Franken, & Hovens, 2016; Roberton et al., 2014). However, much of the literature has focused on anger and aggression in adult populations (Etzler et al., 2014; Hollin, Marsh, & Bloxsom, 2011; Lievaart et al., 2016; Roberton et al., 2014; Swogger, Walsh, Homaifar, Caine, & Conner, 2012). The

predictive relationship between anger and violence in adolescents has not been adequately researched (Blake & Hamrin, 2007; Borum, 2006).

According to Chereji et al. (2012), anger has a strong relationship with violence. However, there has been debate regarding the predictive relationship between anger and violence. According to Vitaco, Van Rybroek, Rogstad, Yahr, and Tomony (2009) and Mela et al. (2008), reactive aggression is predicted by anger. However, Mills and Kroner (2003) suggested that anger does not predict institutional violence and misconduct. Digiuseppe and Tafrate (2011) suggested that anger may have been poorly represented in some of these studies due to an inherent weakness in the measurement ability of the various anger tools. Digiuseppe and Tafrate and Baker, Van Hasselt, and Sellers (2008) added that the measurement instruments may have failed to sample widely enough across the anger domain, may have lacked norms, or may have included normal versus skewed distributions. The ARES was developed with many of these measurement weaknesses in mind and has demonstrated predictive validity in the identification of conduct disorder (Neuhaus, 2014). However, at the time of the current study, researchers had not used the ARES in studying the relationship between anger and disruptive behaviors in the secondary education setting.

Purpose of the Study

The purpose of this retrospective quantitative nonexperimental study was to examine the predictive relationship between anger and aggressive behavior in secondary students in a major Canadian city. Using the ARES and data from file reviews, I collected data related to incidents of violence over the course of 12 months. The independent

variables for this study were the multiple subscores from the ARES tool. The dependent variable was the instances of aggressive/violent behavior among secondary students.

Research Questions and Hypotheses

The research questions (RQs) and hypotheses for the study were the following:

RQ1: To what extent does the ARES predict aggression and violence in secondary students in Canada?

H_o1: There is no significant relationship between ARES scores and violence in secondary students in Canada.

H_a1: There is a significant relationship between ARES scores and violence in secondary students in Canada.

RQ2: Which of the three anger subscales identified on the ARES (Internalizing, Externalizing, Extent of anger) discriminate between aggressive/violent adolescents and nonaggressive/nonviolent adolescents in this population?

H_o2: There is no significant difference between the three anger scales on the ARES in their ability to discriminate between aggressive/violent and nonaggressive/nonviolent adolescents in the population.

H_a2: There is a significant difference between the three anger scales on the ARES in their ability to discriminate between aggressive/violent and nonaggressive/nonviolent adolescents in the population.

RQ3: Is there a relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence?

H_o3: There is no significant relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence.

H_a3: There is a significant relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence.

Theoretical Framework

The conceptual framework for this study was rooted in the general aggression model (GAM). According to Anderson and Bushman (2002), the GAM integrates the ideas of social learning theory, script theory, excitation transfer theory, and social interaction theory, as well as available data of causes and correlates of anger to understand the complicated construct (Dewall, Anderson, & Bushman, 2011; DiGiuseppe & Tafrate, 2007). Anderson and Bushman suggested that three knowledge structures contribute to the output of behavior. The GAM addresses anger, which is believed to play several causal roles in aggression such as reduction of inhibition and interference with cognitive processes (Anderson & Bushman, 2002). Anderson and Bushman also suggested that anger provides fuel to extend potential aggression over time, primes aggressive scripts, and increases arousal that can prime aggression. Anger seems to override normal cognitive processes that might otherwise decrease aggressive tendencies (Gilbert, Daffern, & Anderson, 2015). Additionally, the GAM may serve as a foundation to explain why anger as a standalone variable may be useful in predicting violence in secondary education settings. Over the past several years, the model has been applied to numerous types of violence and aggression such as intimate partner violence, intergroup violence, global climate change effects on violence, and suicide (Dewall et al., 2011). A

more detailed explanation of the GAM and its use in the current study is provided in Chapter 2.

Nature of the Study

The nature of this study was quantitative. I used a retrospective nonexperimental prediction design to examine the relationship between the various subscales and total score of the ARES and the instances of aggression and violence by secondary students. I sought to examine the predictive relationship between anger, the independent variable, and aggression and violence, the dependent variable. Possible moderating variables in this study included gender, grade level, and ethnicity. The construct of anger was measured using the ARES instrument. DiGiuseppe and Tafrate (2011) reported that the instrument was well normed and exhibited excellent internal consistency reliability, excellent test-retest reliability, good discriminate validity, and strong predictive validity. Incidents of aggression and violence were measured through file review. File review was necessary to identify actual behaviors rather than self-reported behaviors.

Definitions

The following terms are defined as they were used in this study:

Adolescent: A youth who is at least 12 years of age, but not yet 18 years of age.

Aggression: "behavior directed towards another individual carried out with the proximate (immediate) intent to cause harm" (Anderson & Bushman, 2002, p. 298).

ARES total score: Score derived from the combination of the ARES internalizing cluster, externalizing cluster, and extent of anger cluster.

Risk factors: "Factors that predict a high probability of violence" (Loeber & Farrington, 2000, p. 733).

Violence: "An act of battery or physical violence that is sufficiently severe to cause injury to another person or persons (i.e., cuts, bruises, broken bones, death, etc.) regardless of whether injury actually occurred; any act of sexual assault, or a threat made with a weapon in hand" (Borum, Bartel, Forth, 2006, p. 23).

Assumptions

The following assumptions were made in this study. First, I assumed that all of the youths who completed the ARES understood the questions that were asked, and responded honestly. The second assumption was that the students' scores on the ARES reflected their anger feelings during the year in question. Third, I assumed that all of the archival data on the aggressive and violent behaviors of the students were collected in a consistent way across the various school settings.

Scope and Delimitations

In this study, I used the general aggression model as a theoretical foundation to better understand the influence of anger in aggressive behavior of youths. I examined the relationship between scores on the ARES and behaviors exhibited by students in secondary education settings. Students were 12 to 17 years of age and located in schools within a major Canadian city. Students in both traditional education settings and alternative education settings were included. Data were collected from students enrolled in the 2017-2018 school year. Exclusionary criteria included students who fell outside of the stated age range, and students with insufficient language skills to read and understand

the ARES. The study focused on the aggressive behaviors of students within the district

as documented by incidents in their school records. Basic demographic data were also

collected, such as age, gender, grade level, and ethnicity. Findings should be

generalizable to most secondary education students in Calgary and potentially Canada.

Limitations

There were several potential limitations in the study. The first limitation was that

the study included archival behavioral data. The study was limited by the documentation

of violent incidents by the school board. A second limitation was that the sample was

recruited from the same city. This may have limited generalizability of the data beyond

the city. Third, the sample may not have been representative of the population because

the sample was limited to students whose parents consented to their participation and

provided assent for their involvement. I could not determine potential differences

between those whose parents provided consent and agreed to their children participate

and those whose parents did not provide consent. This may have influenced

generalizability of the results. A fourth limitation was that the cross-sectional design did

not permit inferences to be made about the direction of the relationship between angry

emotions and violence (see Creswell, 2013). Lastly, several other known risk factors for

violence, such as violence history, substance use, or family factors, were not addressed. It

is possible that factors other than anger played a role in the aggression.

Significance

This research adds to the scholarly literature related to the assessment of the risk

of violence in secondary schools. This project was the first of its kind to include the

ARES instrument to predict aggression and violence in the educational system. Most studies on anger and aggression have been performed with forensic and clinical populations, with most assessment measures being normed on these populations (Bjornebekk & Howard, 2012; Chereji et al., 2012; Kimonis et al., 2011; Mela et al., 2008). Student populations often contain individuals who have less severe problems, and may as such, be more difficult to assess. Additionally, many studies on anger and aggression involving community or educational samples do not include behavioral data but instead relied on self-reported data (Bettencourt & Farrell, 2013; Tsorbatzoudis, Travlos, & Rodafinos, 2013). In the current study, I compared the data from the ARES tools to behavioral data from the student's files. As a result, the findings may be more meaningful and rich as self-report data from the students may be less reliable.

In using the ARES, the hope was not only understanding the predictive validity of ARES but also understanding how the specific anger subdomains were related to aggressive and violent behaviors of adolescents in educational settings. This knowledge may be useful for those working in educational settings. Baker et al. (2008) suggested that using a theory-based and empirically supported instrument may aid clinicians by increasing the clarity of an important risk factor associated with violence. The results of this study may help educators reduce risk of violence by increasing early detection of potentially violent youths. Findings may also lead to better intervention and support, which may contribute to making schools safer places for students.

Summary

Researchers have found a relationship between anger and aggression/violence, but less was known about the predictive relationship between anger and violence in educational settings. The purpose of this study was to determine whether the ARES, an anger assessment tool designed for adolescents, predicted violence in a secondary education setting in Canada. Using the general aggression model as a theoretical guide, I sought to answer questions related to the predictive ability of the ARES. Chapter 2 provides a detailed review of the literature related to aggression and violence, developmental considerations, anger, and risk assessment. A review of the ARES and other anger risk assessments is included in Chapter 2.

Chapter 2: Literature Review

Concerns regarding school violence have increased over the past two decades, not necessarily as a result of increases in the rates of violence, but rather because of the availability of information regarding violent acts due to technological advances. Community members are regularly reminded of violent acts occurring within schools across North America as a result of national news, the Internet, and updates that arrive to their phones. Stories of violence include scenes of people fleeing the building, interviews with frightened teachers and students, and a horrific description of the aftermath. School homicides are a relatively rare occurrence in Canada and the U.S., with a reported 44 school shootings in the U.S. and seven in Canada between 1966 to 2008 (Kalesan, Lagast, Villarreal, Pino, Fagan, & Galea, 2017). During 2013 there were about 966,000 violent victimizations reported in secondary schools in the United States (Zhang et al., 2016).

The impact of violence in educational settings has been well documented. Cornell (2014) suggested that violence in the school setting can have a significant impact on student academic functioning, student and teacher emotional well-being, and the school community as a whole. A study by Raz and Astor (2015) on Israeli students indicated that higher levels of violence, as reported by fifth grade and eighth grade students, were negatively correlated with school achievement. Lacey and Cornell (2016); Espelage, Hong, Rao, and Low (2013); and McCoy, Roy, and Sirkman (2013) found that when students have been victimized or have perceptions that schools are not safe places that

foster respect, academic performance is negatively impacted. Studies indicated that when kids feel safe at school, learning and healthy development are improved (Grover, 2015).

Evidence suggests that many children do not feel safe at school (Rajan, Namdar, & Ruggles, 2015; Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013; Zhang et al., 2016). In 2013, data from students in the United States showed that around 5% of children (approximately 2.5 million) missed at least one school activity or class due to fear of being attacked or harmed (Zhang et al., 2016). The Youth Risk Behavior Surveillance Survey (Kann et al., 2017) indicated similar rates showing that 6.7% of those surveyed had missed at least one day of school in the 30 days before the survey due to concerns about their safety. Of the states surveyed, perceived safety and the missed school rate ranged from 4.5% to 11.8%. The rate of 6.7% represented a significant linear increase from 1993. One response by policy makers and administrators was an attempt to improve the security of schools by adding or changing locks, installing alarms, increasing police presence, and implementing and practicing school lockdowns (Kann et al., 2017). However, the addition of these safety procedures has not been shown to significantly increase students feeling of safety (Perumean-Chaney & Sutton, 2013). Another strategy is to understand better the factors that might increase the risk for students to behave violently, and then subsequently assess for these factors.

Traditional evaluation to ascertain an individual's risk for future violence in schools is often triggered by a specific threat, repeated verbal aggression, or a violent behavior (Borum, 2006; Stein & Durand, 2016). The request for evaluation is typically submitted by school or district administrators. A comprehensive assessment that includes

a review of all available related information and known risk factors for violent behavior is then completed (Robbé, Vogel, & Douglas, 2013). This approach is considered best practice at this time (Borum, 2006; Robbé et al., 2013); however, this approach requires considerable time and resources to complete. It is not feasible for every student to have a risk appraisal completed (Fazel, Singh, Doll, & Grann, 2012). The traditional approach is typically reactive in fashion rather than proactive. In considering the challenge of mass evaluations, it would be more useful to determine risk factors that could be more quickly and efficiently assessed and could yield high levels of accuracy with relation to violent behavior. One risk factor that has been supported in the scholarly literature as having a strong correlation with violence is anger (Chereji et al., 2012; Kimonis et al., 2011; Roberton et al., 2014).

Although anger does not cause violence and is not required to be present when violence occurs, anger has a strong correlation with violence (Etzler et al., 2014, Kimonis et al., 2011; Lievaart et al., 2016; Roberton et al., 2014). The general aggression model provides a theoretical lens to examine the supposition that anger is correlated with violence (Anderson & Bushman, 2002), and the anger construct has been used to predict aggression. Although there have been mixed results regarding the effectiveness of the anger construct in predicting aggression (Mela et al., 2008; Mills & Kroner, 2003; Vitaco et al., 2009), the variations in results may stem from weaknesses in the instrumentation used to evaluate the anger construct (Digiuseppe & Tafrate, 2011). A new tool for evaluating anger in adolescence was needed to address this weakness. The purpose of the

current study was to examine the predictive validity of the ARES in the identification of violent and aggressive students in secondary education settings in a major Canadian city.

Chapter 2 provides a detailed review of the literature related to aggression and violence. The chapter provides a comprehensive examination of the theory used to guide the study, and addresses the construct of anger and how it relates to aggression. Because I sought to better understand the likelihood of violence in adolescents, developmental considerations were explored in addition to risk assessment for this population. The scope of youth violence in the community and school settings were also addressed. Finally, a review of the ARES and other anger risk assessments is presented.

Literature Search Strategy

To identify relevant literature, I searched six different databases: PsychINFO, Education Source, PsychARTICLES, SocINDEX, Criminal Justice Database, and Education Research Complete. The idea of using multiple databases to search for articles was supported by Creswell (2013). Although Betran, Say, Gulmezoglu, and Hampson (2005) suggested that there is a fair amount of overlap between databases, the use of multiple databases provides a more thorough review of the literature. Failure to use multiple databases can lead to a greater possibility to miss valuable articles and may result in distortions in knowledge (Betran et al., 2005). This is particularly true if searches are limited to, for example, psychological databases. In the perusal of the aforementioned databases, the following key words were used: *anger*, *violence*, *aggression*, *assessment*, *adolescents*, *schools*, *development*, and *anger regulation and expression scale*. Key words were combined using Boolean operators. Peer-reviewed

scholarly articles published between 2012 and 2018 were included. A secondary search was conducted using the reference lists obtained from the initial articles and books related to the assessment of violence, school violence, and adolescent assessment. Only articles published in English were included. Lastly, seminal articles related to youth violence were included in the literature review.

Theoretical Foundation

Many theories have been purposed over the years to explain the association between anger and aggression. However, many of these domain-specific theories failed to capture the scope and complexity of human behavior in relation to anger and aggression. The general aggression model (GAM), developed by Anderson and Bushman (2002), integrates the ideas of several empirically supported theories. Theories such as social learning theory, script theory, excitation transfer theory, and social interaction theory are combined, as well as available data on the causes and correlates of anger to understand the construct (Dewall et al., 2011; DiGiuseppe & Tafrate, 2007). The GAM includes theory related to "knowledge structure for perceptions, interpretations, decision making, and action" (Anderson & Bushman, 2002, p. 33). The GAM also provides a more inclusive account of aggression than some of the other theories that fail to explain the multiple motives for aggression, including those that are affective based and instrumentally based.

The GAM explains that three primary processes influence aggressive behavior (Anderson & Bushman, 2002). The first process, inputs, includes personal and situational factors that influence aggression (Anderson & Bushman, 2002). Both personal and

situational factors are thought to influence an individual's cognitions, affect, and arousal. The personal factors include (a) personality traits, factors that might predisposition an individual to higher levels of aggression; (b) beliefs in the ability to successfully carry out an aggressive act; (c) gender, with males perpetuating more direct aggression; (d) values about the right and wrong of aggressive behavior; and (e) long-term goals or expectations about the life course (Anderson & Bushman, 2002). The situational factors are the environmental circumstances or situations that can contribute to aggression, including (a) aggressive environmental cues, such as the presence of a weapon; (b) provocation possibly in the form of insults; (c) frustration, possibility in a failure to attain a goal; (d) pain and discomfort, such as being too hot or cold; (e) substances use; or (f) incentives, also described as desires or wants (Anderson & Bushman, 2002).

The second process is the three routes, or the internal processes that take place following the input variables: cognition, affect, and arousal (Anderson & Bushman, 2002). Cognition, includes hostile thoughts and scripts (Anderson & Bushman, 2002). When aggressive thoughts are frequent in an individual's life, they become more readily accessible when the individual is provoked (Anderson & Bushman, 2002). Scripts, on the other hand, are the underlying ways that people view the situation, often in a negative and hostile way (Anderson & Bushman, 2002). The second route is affect, which refers to an individual's mood and emotion (Anderson & Bushman, 2002). In the context of aggression, a general negative affect is manifest (Anderson & Bushman, 2002). The final route is arousal, which is described as energy or physiological activation (Anderson &

Bushman, 2002). For example, if a person is provoked when already activated, aggression is more likely.

The final process in the model is the outcome. Outcomes are influenced by complex information processing or by automatic or impulsive actions (Anderson & Bushman, 2002). Individuals make an initial appraisal of a situation in the context of the inputs and the activation of the routes. Depending on the inputs and the activation of the routes, a person may display more impulsive or immediate aggression (Anderson & Bushman, 2002). If individuals have sufficient resources, such as time or cognitive capacity, they may be able to inhibit the aggressive action and reappraise the situation (Anderson & Bushman, 2002).

A strong facet of the GAM is its emphasis on the mediating role anger can play on the process to aggression. Anderson and Bushman (2002) postulated that anger has several causal roles in aggression, including reducing inhibition by providing justification for aggression and interfering with higher order cognitive processes. Anderson and Bushman also suggested that anger contributes to longer psychological activation and elongates the time in which a person might behave aggressively. The activation of anger may also provide clues about how a person should behave in a given situation and may prime aggressive thoughts and scripts.

The GAM has been explored and supported in numerous studies. Coyne (2016) and Martins (2013) found that viewing relational aggression on television was associated with individuals' relational aggression and hostile attributions. These findings supported the underlying principles of the GAM that witnessing violence can contribute to personal

factors such as a person's values about violence as well as the development of negative scripts (Coyne, 2016; Martins, 2013). Additionally, the three routes (cognition, arousal, and affect) can also be influenced, priming the individual who is viewing relational aggression in the media to be more aggressive in the same way that viewing aggression on television can prime an individual toward violence (Anderson & Bushman, 2002). This idea was supported by a recent meta-analysis conducted by Benjamin and Bushman (2016). The GAM has also been applied to the playing of violent video games with mixed results (Hollingdale & Greitemeyer, 2013; McCarthy, Coley, Wagner, Zengel, & Basham, 2016)

The utility of the GAM was also related to economic downturn and aggression. Barlett and Anderson (2014) found a significant correlation between economic stress and aggression. Gilbert, Daffern, Talevski, and Ogloff (2013) examined the three knowledge structures highlighted in the GAM and found that normative beliefs and scripts were associated with aggression in addition to trait anger. Interpersonal hostility, aggressive script rehearsal, and positive attitudes toward violence and trait anger were also connected with aggression (Podubinski, Lee, Hollander, & Daffern, 2017).

Based on the literature, it appears that the GAM has various applications and positive utility in framing aggressive behavior. The model seems to effectively combine many theoretical concepts related to biology, personality, development, cognition, and decisional process to capture the complexity of human behavior as it relates to aggression. The GAM also highlights the significant role anger can play in the process of aggression. Perhaps most importantly, the GAM seems to share many of the theoretical

constructs and principles that the ARES was based on. More specifically, the ARES is

founded in the five domains model of emotion that suggests that anger and subsequent

aggression is based on provocation, cognitions, arousal, motives, and behavior

(DiGiuseppe & Tafrate, 2011). The structure of the GAM encompasses all five of these

processes, yielding a sufficient fit between theory and the tool of investigation.

Violence in Youth Populations

According to Bushman et al. (2016) violence is defined as "aggression with the

goal of extreme physical harm such as injury or death" (p. 18). A popular violence risk

assessment tool for adolescents, the Structure Assessment of Violence Risk in Youth

(SAVRY) defines violence as "An act of battery or physical violence that is sufficiently

severe to cause injury to another person or persons (i.e., cuts, bruises, broken bones,

death, etc.) regardless of whether injury actually occurred; any act of sexual assault, or a

threat made with a weapon in hand" (Borum, et al., 2006, p. 23). The World Health

Organization (n.d.) offer a more general definition describing violence as "the intentional

use of physical force or power, threatened or actual, against another person or against a

group or community that results in or has a high likelihood of resulting in injury, death,

psychological harm, maltreatment, or deprivation". Each distinct definition relates

directly to interpersonal aggression towards others aimed at causing harm and distress.

Regardless of the utilized definition, in 2012 youth (10 to 24 years of age) in America

were responsible for approximately 40% of violent crimes in the country (David-Ferdon,

& Simon, 2014); representing a disproportionate amount of violence by that age range

(Bushman et al., 2016). The disproportionate rates of violence perpetrated by youth aged

12 to 24 also exist in Canada (Statistic Canada, 2016). It is estimated that violent crimes perpetrated by youth aged 10 to 24 cost American's over 16.2 billion annually in lifetime combined medical and work loss costs ((David-Ferdon, & Simon, 2014).

Compared to youth in other industrialized nations, youth in the U.S. perpetrate violence at significantly higher rates (David-Ferdon & Smith, 2014). The rates of youth who reported being involved in aggressive behavior (fighting) in Canada were similar to the rates reported in the U.S. (Pickett et al., 2005). It is reported that every day in the U.S. 13 young people are victims of homicide, most of which are perpetuated by other youth (David-Ferdon & Simon, 2014). An additional 1,642 daily require medical assistance as a result of physical violence. Despite the fact that rates of violence have been on the decline over the past 20 years, data suggested that youth (12-17) still make up about 14 percent of all violence-related arrests (David-Ferdon, & Simon, 2014; Statistic Canada, 2016). The violent crime rate has also decreased in Canada between 2000 to 2014 from 1,944 to 1,281 per 100,000 (Public Safety Canada, 2012; Statistics Canada, 2014), but still remains too high.

The Youth Risk Behavior Surveillance (YRBS) survey tracks a number of behaviors that contribute to unintentional injury and violence. Using the YRBS researchers collected data from over 15,000 students in the U.S. with the results revealing that in at least one day, in the 30 preceding the survey, over 15% of students had carried a weapon (Kann et al., 2017). Of those over 5% had carried a gun in the 30 days before the survey, and almost a quarter of those surveyed reported that they had been in a physical fight one or more times in the preceding 12 months of the survey (Kann et al., 2017).

Zimmer (2013) reported that there are some distinct similarities and differences between youth and adult violent perpetrators. Zimmer suggested that youth are involved in a higher frequency of assaultive behavior, but the behavior is often less severe (Zimring, 2013). The less severe nature of the violent incidents likely translated to youth being charged for violent crimes about eight times less than their adult counterparts (35,912 arrest verse 296,787) (Federal Bureau of Investigations, 2016). Zimmer further noted that youth violence is much more frequently perpetrated when there is group involvement. Similarly to the adult population, much of youth violence is perpetrated by disadvantaged individuals with males being responsible for the greatest percentage of violent offences (Zimmer 2013).

Youth violence results from an interplay of factors including individual, family, and community. With regards to individual factors, it appears that youth with lower levels of internal locus of control exhibit violence at significantly higher rates than those with high levels of internal locus of control (Ahlin, 2014). This finding was stable even when controlling for family and community factors. There was also a plethora of studies highlighting the impact that exposure to domestic and interpersonal violence has on increasing the probability of violent perpetration by youth (Ebesutani, Kim, & Young, 2014; Izaguirre & Calvete, 2016; Narayan, Englund, Carlson, & Egeland, 2015). Researchers have also provided significant empirical support regarding the influence of exposure to community violence and violent behavior by by youth (Hamner, Latzman, Chan, 2015; McMahon et al., 2013; Mrug, Madan, & Windle, 2016). In a similar vein, Slatter and Meyers (2014) Highlighted that parental monitoring, community violence,

and deviant peer interaction were correlated to overt antisocial behavior including violence, although of the three, community violence and deviant peers were the stronger predictors.

The correlation between negative peer association (deviant peer associations) and violent behavior was also documented by Bond and Bushman (2017) who noted that those with friends who behaved violently were 48% more likely to behave violently themselves. Further, an individual's risk of behaving violently increased the more violent peers they associated with (Bond, Bushman, 2017; Schwartz, Hopmeyer, Luo, Ross, Ficher, 2017). Albert, Chein, and Steinberg (2013) also highlighted the impact peer associations have on high-risk behavior noting that when surrounded by a peer group, youth exhibited more neural activation in the pleasure centers of the brain, and subsequently engaged in more risky behavior.

Developmental Considerations

(Bushman et al. (2016), David-Ferdon and Simon (2014) and Statistics Canada (2014) cited that incidence of violent behavior increase in frequency during adolescence. Delinquent behavior in adolescents takes place in high frequency, despite few young people being arrested. Halikias (2000) and Moffitt (1993) suggested that those described as delinquent are not all that different from the "average" adolescent. Fagan and Catalano (2013) highlighted the upward trend of violence starting in middle adolescence and peaking in late adolescence or early adulthood. David-Ferdon and Simon (2014) and Statistics Canada (2014) noted that by age 18, the rates of delinquent behaviors by youth begins to decrease substantially; this profile also applies to those with violent offenses.

Borum (2006), indicated that by 21, approximately 80% of youth who participated in violence would no longer do so. As a result, we cannot conclude that episodic violence in adolescents will result in the development of a serious offender; rather, that episodic violence in adolescences is developmental rather than deviant (Halikias, 2000). Only a very small percentage of young people will go on to be consistent deviant or life-course persistent offenders; although this group makes up over 50% of crimes and 70% of violent crimes (Moffitt, 1993).

Youth develop at different rates physically, cognitively, socially, and emotionally (Halikias, 2000). Those working with youth must take into consideration not only the variability in youth development, but also the instability and inconsistency associated with adolescent development. Moffitt (1993), described the antisocial behavior during this time of fluctuation as "the gap between biological maturity and social maturity" (Moffitt, 1993, p. 14).

Adolescence is also a time of identity formation. Erickson (1966) framed the period as *identity verse role confusion.* During this period of development that Erickson believed to stretches from about 12-18, teens attempt to figure out who they are and who they want to be. It is a time of exploration. A time of instability stability in the adolescents' behavior and personality (Erickson, 1966). The result of this fluctuation is a greater range of behaviors across different contexts (Borum 2006).

During adolescence, significant developmental changes occur in the brain leading to, at times, impulsive, risky, and perplexing behavior (Mayzer, Bradley, Rusinko, Ertelt, 2009). The prefrontal cortex (PFC), the area of the brain that is involved in executive

function, has been identified as a contributor to risky behavior (Mayzer et al., 2009; Paus, 2005). The PFC aids in cause and effect reasoning, planning, coordinating, organizing, inhibition, and selective attention (Mayzer et al., 2009). Deficits in PFC function, as is evident in most teens as the PFC is the last to develop fully, is believed to contribute to adolescent risk-taking and involvement in delinquent behavior, often as a function of increased susceptibility to negative peer influences (Moffitt, 1993; Scott & Steinberg, 2008). The PFC weakness is also believed to impact the violent behaviors of young people (Mayzer et al., 2009; Scott & Stienberg, 2008). Interestingly, the crime rates seem to decrease substantially along side the development of the PFC in early adulthood (Statistics Canada 2014; Mayzer et al., 2009), making brain functioning an important factor to consider in the context of secondary education students.

Gender Differences in Youth

In both adolescence and adults most violent behaviors are committed by males (Dinić, Kodžopeljić, Sokolovska, & Milovanović, 2016; Marsee et al., 2014; Statistic Canada 2014; Tsorbatzoudis et al., 2013). At all ages, boys demonstrate more aggressive and violent behaviors than their female counterparts (Dinić et al., 2016; Marsee et al, 2014). Recent data suggests that male youth are twice as likely to engage in violent behavior compared to female youth, 30 percent and 15 percent respectively (Public Safety Canada, 2012). According to the Kann et al. (2017) and Rajan, Namdar, and Ruggles (2015) males were reported to carry weapons more frequently than females and were involved in fights almost twice as often as female on school property. Dinić et al. (2016) revealed a correlation between empathy level and violence, and noted that males

were significantly less empathetic than females. Cenkseven-Onder, Avci, and Colakkadioglu (2016) and Marsee et al. (2014) also noted the gender difference in aggression, citing that males were more involved in both reactive and proactive aggression than females, except within detained samples in which the incidents of physical aggression were higher with females.

Type and Severity of Violence and Aggression

Aggressive behavior is often categorized in terms of a dichotomy, reactive versus proactive. In a recent evaluation of the Reactive Proactive Aggression Questionnaire three categories of youth aggressors were determined; Reactive aggressors, proactive aggressors and those with a combined profile (Colins & Colins, 2016). Reactive aggression is described as behavior that follows some provocation without much thought or planning (Colins & Colins, 2016). It is typically sparked by a perceived threat, perhaps caused by hypersensitivity that increases arousal (Borum, 2006). Reactive aggression is quite impulsive, retaliatory and defensive in nature (Cenkseven-Onder et al., 2016). Proactive aggression, also referred to as instrumental aggression, is premeditated and planned (Colins & Colins, 2016). The underlying cognitive process may be goal attainment or positive expectancy and as such arousal is typically low (Borum, 2006). The aggressive act is deliberate and self-serving (Cenkseven-Onder et al., 2016). Reactive aggression is reported to stem from frustration and anger whereas proactive aggression is thought to derive from reinforced social learning (Colins & Colins, 2016).

Research on proactive and reactive aggression suggests that there is a correlation between both reactive and proactive aggression and psychopathic traits such as callous-

unemotional traits, narcissism, and impulsivity (Monoz Certifanti, Kimonis, Frick, & Aucoin, 2013; Perenc & Radochonski, 2014). However, the correlation was stronger for proactive aggression and psychopathic traits than for reactive aggression, except with regards to impulsivity which was higher for those demonstrating reactive aggression (Perenc & Radochonski, 2014). Extending the idea that impulsivity is characteristic of reactive aggression, Munoz Centifanti et al. (2013), noted that those with higher levels of hypervigilance characterized by sympathetic and parasympathetic reactivity were at greater risk. Colicoy, Casas, and Ruiz, (2017) also noted the role of personality features on proactive aggression citing that narcissism was most strongly correlated. For females, insecurity and defensiveness were thought to be contributing factors for aggression (Suter, Urben, Pihet, Bertoni, & De Ridder, 2015).

Violence in Schools

One of the primary goals of school administrators is to provide a safe environment in which their students can learn and grow. This is particularly important because students spend about a half of their time awake at school. In Canada, it was reported that around 10% of police reported crimes occurred at school or just outside of school hours (Statistic Canada, 2014). Data showed that the rates of violent victimization within schools had decreased over the past several decades (David-Ferdon, & Simon, 2014), but still remain high. Over 65% of schools in the U.S. reported one or more violent incidents in the 2013-14 school year (David-Ferdon, & Simon, 2014). The result is a staggering 757,000 violent incidents. Although deaths resulting from violence in schools are quite rare (less than 3% of total number of youth homicides), the huge

number of non-fatal incidents have a toll on school and academics (David-Ferdon, & Simon, 2014; Zhang et al., 2016). Perhaps surprisingly, the rate of nonfatal victimization, 19 per 1,000, was higher in schools than away from schools, 13 per 1,000 (Zhang et al., 2016). With regards to serious violent victimization little difference was reported regardless of location (community versus school).

According to the Kann et al. (2017), one in four high school student's reports being in a physical fight with 8% of students reporting being in a fight on school grounds in 12 months before the survey. Around 5% had brought a weapon on school property despite strenuous rules against doing so (Kann et al., 2017), with males doing so more frequently than females (Rajan, Namdar, & Ruggles, 2014). Six percent of students reported being threatened or injured by a peer with a weapon on school property (Kann et al., 2017). In Canada, a reported one-fifth of violent crime committed by youth takes place on school campuses (Statistic Canada, 2016). Violent crimes as defined by Statistics Canada (2016) include assault, robbery, sexual assault and homicides.

Students are not the only victims of school violence, teachers, support staff and administrators are also impacted. In a survey of school safety, teachers were asked about whether they had been threatened or injured by a student between in the 2011-12 school year. According to the survey results, almost 10% of respondents indicated that they had been threatened or injured by a student during the time frame (Zhang et al., 2016). Additionally, the rate of violent victimization was 5% higher than any other survived year with the number of violent incidents towards teachers being higher in elementary schools, and higher in public schools (Zhang et al., 2016).

History of Violence Risk Assessment

The function of risk assessment instruments is to ascertain the likelihood of future violence (Hanson, 2009). It is challenging as it involves "judgments about uncertainty" (Hanson, 2009, p. 172). Violence assessment is conducted by determining individual's scores on empirically identified factors that are associated with violence (Schwab, 2007). The scores or ratings are never certain, but can limit the range of possibilities. The factors that aid evaluators in determining future likelihood of violence are called risk factors (Rennie & Dolan, 2010). Risk factors often included are offending history, substance abuse, family problems, peer delinquency, and school problems. The selection of the risk factors is critical as well as the method in which they are combined (Hanson, 2009). The sum of the scores on the factors yields a risk rating that is typically described in terms of high, medium, or low (Hanson, 2009).

Risk factors are broken down into three distinct categories, static, dynamic and protective/promotive (Farrington, Ttofi, & Piquero, 2016). Static risk factors are aspects of the offender's history that are fixed or cannot be changed (De Vries Robbe, de Vogel, Douglas, & Nijman, 2015). These include things such as age, number and type of crimes committed, and age of first offence. Dynamic risk factors are those variables that are potentially changeable (De Vries Robbe et al., 2015). They include things such as attitudes, supports, and peer relations. Protective/promotive factors are those variables that when present, reduce the risk of violence (Farrington et al., 2016). The application or use of static factors, dynamic factors, protective factors relates to the type of assessment tool used (i.e. first generation, second generation or third generation) and will be

discussed shortly. The use of the static and dynamic risk factors in the application to

adolescents is critical (Gammelard, Koivisto, Eronen, & Kaltiala-Heino, 2015). However,

the effectiveness of protective is in question with some studies suggesting that protective

factors add to the predictive accuracy while others suggesting they provide little to the

incremental validity (Gammelard et al., 2015; Hilterman, Nicholls, & Nieuwenhuizen,

2014; van der Put & Asscher, 2014). Vincent, Perrault, Guy, & Gershenson (2012) noted

that the effect size for age of first offense and time of first contact with the police (static

factors), were most predictive of reoffending, but that the next largest effect size was

family problems, delinquent peers and conduct problems (dynamic factors). This

literature suggests that the dynamic factors play a significant role in our interpretation of

risk.

The ideal risk assessment should be valid and reliable (De Bortoli, Ogloff, Coles,

& Dolan, 2017). The assessment should take into consideration all relevant factors and

provide an estimate of risk, both long-term and short-term (De Bortoli et al., 2017;

Hanson, 2009). The assessment should also aid in understanding the nature, origins, and

effect of the violent incident (Hanson, 2009). In addition to evaluating the risk factors,

the ideal risk assessment should also highlight an adolescents protective/promotive factor

(Farrington et al., 2016). Lastly, the assessment should be clear and concisely written

with some explanation of any conclusions that might be in opposition to the empirical

data (Borum, 2006).

The process of risk assessment has gone through some changes over the years. In

the early years of risk assessment, so-called first-generation assessments, also called

unstructured professional opinion, relied solely on the impressions of the clinician (De Bortoli et al., 2017; Hanson, 2009; Schwab, 2007). They were not structured and considered clinically weak (Hilterman, Nicholls, & Nieuwenhuizen, 2014). Borum (2006) and Hanson (2009) suggested that mental health professionals utilizing first-generation methodology were classifying individuals incorrectly more than correctly. In a survey of professionals who regularly conduct risk assessment, only two of the 215 psychologists sampled indicated that they still used unstructured clinical judgment (Viljoen, McLachlan, & Vincent, 2010).

Second-generation instruments no longer relied on a clinician's impression but were grounded in statistical weighting of risk factors (actuarial) between the assessment instruments and reported offending (Andrews, Bonta, Wormith, 2006; De Bortoli et al., 2017). The second-generation tools provided substantially better accuracy than that of the first-generation tools (Hanson, 2009). The tools were limited however to prediction and classification as they were solely based on the use of static factors failing to take context into account (De Bortoli et al., 2017; Schwalbe, 2007). Further, concerns were raised regarding the use actuarial instruments on those of varying cultures and ethnicities, and have been impugned by the Canadian Federal Court for use in forensic matters (Sheperd & Lewis-Fernandez, 2016). The rationale for this decision is related to the samples used for validation, that being primarily Caucasian in make-up, and the reduced predictive ability as a result (Shepherd, 2016; Shepherd & Lewis-Fernandez, 2016).

Third-generation tools also referred to as Structured Professional Judgment (SPJ), are based on both static and dynamic factors (De Bortoli et al., 2017). Forensic

psychologists now use the SPJ approach more than any other method (Hanson, 2009).

They are structured in nature and provide prediction, classification, and intervention

planning information (Andrews et al., 2006; De Bortoli et al., 2017; Schwalbe, 2007).

The SPJ approach specifies the risk factors in advance, but the ultimate interpretation is

left up to the clinician. According to a recent meta-analysis, third-generation instruments

performed slightly better than second-generation tools in predictions of risk to re-offend

(AUC 6.46 for 3rd gen. and 6.35 for 2nd gen.) (Schwalbe, 2007). Those classified as high

risk by SPJ tools had a 25% higher odd of committing a violent act compared to those

classified high risk by actuarial tools (Singh, Frazel, Guerhuieva, & Buchanan, 2014).

Contradictory results were noted by Hanson (2009) and McCafferty (2017) who reported

that pure actuarial or second-generation tools provided superior predictive ability.

Despite the debate, a larger proportion of clinicians favored the SPJ approach when

assessing Juveniles (Viljoen et al., 2010).

It is suggested that the development of research-based tools for predicting youth

violence has progressed more slowly than for adults with many of the tools utilized on

adolescents stemming from a downward extension of the adult tools (Schwalbe, 2007).

The current studies "show that most well developed instruments predict recidivism well

above chance (Schwalbe, 2007, p. 451). The Youth Level of Service/Case Management

Inventory (YLS/CMI) demonstrated good predictive ability with AUC values from 0.66

to 0.77 (Hilterman et al., 2014; Oliver, Stockdale, & Wong, 2012). The Structured

Assessment of Violence Risk in Youth, has also demonstrated solid predictive validity

(Childs, Ryals, Frick, Lawing, Phillippi & Deprato, 2013; McGowan Horn, & Mellot,

2011). Oliver, Stockdale, and Wormith (2009) reported that of the three main violence

risk assessments used for adolescents (YLS/CMI, Psychopathy Checklist and the

Structured Assessment of Violence Risk in Youth), all demonstrated strong predictive

ability and performed commensurate with one another. These results were supported by

Shepherd (2016) as well as Hilterman et al. (2014).

Anger and Aggression

Many terms such as aggression, hostility, irritability, and frustration have been

used, often interchangeably to describe the construct of anger (DiGiuseppe & Tafrate,

2007). DiGiuseppe and Tafrate (2007) noted that it was this such ambiguity that has led

to a lag in scholars creating a clear definition of anger, one that can be a solid base for

empirical study. At its core, anger is a basic emotion present in all humans. Anger, which

is subjective in nature, has been described as a psychosocially adaptive emotion

involving, cognitions, arousal, and with a behavioral dimension (Blake & Hamrin, 2007).

Varying in range and severity from normal to psychopathological, anger can be

adaptively necessary yet potentially problematic when reactions are disproportionate with

the situation, happen too frequently, and are exhibited in antisocial ways (Decuyper, De

Bolle, De Fruyt, 2011). Although anger has the potential to activate aggression, all

aggressive behavior is not necessarily related to anger (DiGiuseppe & Tafrate, 2007).

Anger is a variable that many researchers have linked to the development of

aggression (Chereji et al., 2012; Kimonis et al., 2011; Roberton et al., 2014). Anger has

been correlated to both productions of direct and indirect aggression (Fives, Kong, Fuller,

& DiGiuseppe, 2011). One of the ways that anger influences aggressive behaviors is by

causing individuals to misinterpret social or environmental cues (Fives et al., 2010). As anger increases arousal, cognitive processes related to focus, attention, and concentration can all be hampered (Fives et al., 2010). Moon and Jang (2014) revealed that strain and negative emotions such as anger had a positive correlation with verbal aggression and bullying. Higher levels of trait anger also seemed to be linked to lower anger control and more importantly higher levels of aggression for both males and females (Roberton et al., 2014). A similar study on 413 high school students yielded similar results showing that individuals with lower levels of emotional control demonstrated poorer anger control and subsequently higher levels of aggression (Kuzucu, 2016). These studies suggest that anger and anger control are important constructs to understand when discussing aggressive behavior.

Anger's influence on other cognitive processes believed to be connected with aggressive behaviors have also been investigated. White and Turner (2013) noted that anger ruminations, the unintentionally dwelling and mentally ruminating on provocative situations, was positively correlated with reactive aggression and proactive aggression (Peters et al., 2015; White & Turner, 2013). White and Turner's (2013) study showed that males with anger rumination use proactive aggression more than females, no difference was found related to reactive aggression (White and Turner, 2013). A similar study also showed that anger rumination interacts with contingent self-esteem (self-esteem that is dependent on external factors) to predict reactive aggression for males (Turner & White, 2015).

In children and adolescents, anger experience and hostility are also positively related to risk-taking (Gambetti & Giusberti, 2016). This is important as it seems there is a link between anger and decision making. Colins and Colins (2016) utilized the Reactive Proactive Questionnaire, a 25-item measure on reactive and proactive aggression, and highlighted the correlation between anger and aggression. Investigation of the literature, revealed few studies to refute the connection between the two variables.

The link between anger and aggression is furthered when investigating aggression reductions strategies. Many of these strategies aimed at decreasing aggression specifically target anger. When anger is decreased, reductions in aggression appear to follow. Taylor, Navaco, and Brown (2016) noted a 34.5 % reduction in aggressive incidents following cognitive behavioral anger treatment in which sample of clients with intellectual deficits. And anger reduction techniques such as mindfulness and DBT have also been noted to produced positive results in the reduction of anger and aggressive behaviors (Frazier & Vela, 2014; Shorey, Seavey, Quinn, & Cornelius, 2014; Takebe, Takahashi, & Sato, 2015).

Assessing Anger to Predict Aggression

The construct of anger has been utilized in the past to predict future acts of aggression. Mela et al. (2008) tested the predictive utility of the State-Trait Anger Expression Inventory (STAXI), a measure designed to capture the various components of trait anger, to assess institutional acts of aggression in 285 male offenders. The results showed that a reduction in STAXI scores following a treatment group for anger translated into a reduction in institutional acts of aggression.

Several years later the construct of anger was again used to compare incidents of aggression with scores on the Novaco Anger Scale and Provocation Inventory (NAS-PI), a self-report measure of anger disposition and anger intensity. The measure was administered to a sample of 477 non-clinical, 250 clinical, 167 male prisoners, and 64 male forensic participants (Moeller, Novaco, Heinola-Nielsen, and Hougaard, 2016). The results showed that for both past and future acts of aggression, higher scores on the NAS yielded an increase in the number of aggressive incidents (Moeller et al., 2016). As such, understanding, and measuring, the construct of anger may prove to be useful in understanding the probability of aggressive behaviors in others.

Anger tools also appear to have utility for predicting aggression outside of institutional facilities. When administered to psychiatric patients prior to release, upon follow-up in the community, anger was positively correlated with self-directed violence, other-directed violence, and co-occurring violence. Scores on the NAS were shown to effectively differentiate individual with psychiatric conditions who were violent from those who were nonviolent (Doyle & Dolan, 2006; Swogger, Walsh, Homaifar, Caine & Conner, 2012). Ullrich, Keers, and Coid (2013) suggested that those psychiatric patients with higher levels of violent behavior displayed delusional thought content that sparked anger (i.e. being followed, plotted against, and controlled).

Anger Assessment Tools for Adolescence

Several tools exist for the assessment of anger in Adolescents. A few of the more studied tools include the State-Trait Anger Expression Inventory -2 Child and Adolescents (STAXI-2 C/A), the Novaco Anger Scale and Provocation Inventory (NAS-

PI), and the Adolescent Anger Rating Scale (AARS). The STAXI-2 C/A is a 35 item self-report inventory intended for youth aged 9 to18 (Stein, 2009). Stein (2009) reported the STAXI-2C/A is a downward extension of the adult version or the measure with language adapted to a fourth-grade reading level. The measure is intended to assess the youths experience, expression, and anger control while accounting for state and trait (Stein, 2009). Stein (2009) indicated that the measure founded on the framework of one of the most widely researched measures, but noted the lack of test-retest reliability in the manual was a weakness of the measure given the assumption of trait anger stability over time (Stein, 2009). Also, the normative sample not well-defined so generalization of results was weakened (Stein, 2009). Lastly, Stein noted that the measure lacked the ability to discriminate between the clinical and normative population on the internalized anger index.

The NAS-PI is two-part self-report measure of anger intended for individuals between ages 9 to 84. The NAS is a 60-item measure and the is a PI 25-item measure. It was based on an age stratified sample of over 1,500 individuals and separate norms exist for children, teens, adults (Bugaj, 2003). The measure demonstrated high levels of internal validity and strong concurrent validity with other anger measure (Bugaj, 2003). It was also noted to have moderate predictive validity for violent crimes. Some questions regarding suitability of measure with minority populations was present, as African Americans in general scored higher than the normative sample (Bugaj, 2003). Additionally, no examination of readability of items was provided so the measure may not be appropriate for younger or less educated individuals. One finial weakness of the

measure was that no validity scales were provided so the measure may be susceptible to social desirable responding (Bugaj, 2003)

The AARS is a 41-item self-report measure intended for use with adolescents 11 to 19 years of age. The instrument was intended to assess for instrumental anger, reactive anger, and anger control, in addition to providing a total anger score (Henington, 2001). The measure is theoretically based in cognitive-behavioral ideals (antecedent, belief/thoughts, behavior). Henington (2001) reported that the measure was normed on a sample of over 4,100 from across the U.S. with items are designed for youth with a minimum of a fourth-grade reading level. Similar to the NAS-PI there are no validity or lie scales meaning the measure will not be able to detect social desirability in responses (Henington, 2001). Additionally, Henington (2001) suggested that the instrument may lack sensitivity to changes in anger over time.

The Anger Regulation and Expression Scale (ARES) is also a self-report measure consisting of 75 items. The instrument measures expression and regulation of anger in adolescents. The items break down to create three clusters, Internalized Anger, Externalized Anger and Extent of Anger (Cavlazoglu, Erdogan, Paine, & Jones, M. (2013; Hazel, 2011). An anger total score is also provided. The anger clusters directly reflect various types of anger disorders purposed by the authors; Anger Disorder, predominately subjective types, predominately expressive types, and combined type. Within these three clusters, 18 total subscales emerged (DiGiuseppe, & Tafrate, 2011). DiGiuseppe and Tafrate (2011) provided a clear definition for anger and explanation of each of the clusters and the 18 subscales.

The measure appeared to have a strong theoretical foundation. The five-domain model is, in part, derived from Power and Galgeish's work on emotions, more specifically the cognitive theory of emotion referred to as Schematic Propositional Associative Analogue Representation System (SPAARS) (DiGiuseppe, & Tafrate, 2007). The SPAARS model, considered a dual-pathway approach, consisting of the perception of a threat followed by a number of cognitive processes was supported in the literature in several contexts (Carolan & Power, 2011; Coyle, Karatzias, Summers, & Power, 2014; DiGiuseppe & Tafrate, 2007; Harrison, Genders, Davies, Treasure, & Tchanturia, 2011). The SPAARS model utilizes the dual-pathway approach breaking the process into five separate domains (DiGiuseppe, & Tafrate, 2011). The domains include: provocation, cognition, arousal, motive, and behavior. Each of the five domains had been shown by empirical literature to be involved in eliciting anger in children, adolescents, and adults (DiGiuseppe & Tafrate, 2011; DiGiuseppe & Tafrate, 2007). The 18 subscales of the ARES were designed to fit within the framework of the five domains.

The authors suggested that many previous tools used to capture anger focused primarily on the expression of anger (physical and verbal displays) and mostly ignored the internal symptoms, had limited clinical utility, and lacked validity indexes (DiGiuseppe & Tafrate, 2011). In the creation of the ARES, DiGiuseppe and Tafrate attempted to make up for narrow assessment of other major anger tools, by sampling more widely across the domains of the anger experience and providing validity indexes.

Summary

Youth violence continues to be a concern both in the community and educational settings. Due to public desires to ensure schools offer safe environments for children, administrators are using the services of psychologists and mental health professionals more frequently to ascertain student's level of risk. Instruments that professionals are using to measure risk in adolescence are now more accurate and provide good predictions of future violence (De Bortoli et al., 2017). Despite this, the literature supports the notion that there is still much to learn regarding assessments of violence in youth (Cornell, 2014). One construct that appears to be understudied within educational settings is anger. Although the data shows a strong correlation between anger and aggression, few studies have been conducted in the area (Chereji et al., 2012; Kimonis et al., 2011; Roberton et al., 2014). A relatively new tool, the ARES shows promise in elevating this gap. The present study seeks to add to the empirical literature related to violence assessment by investigating the predictive validity of the ARES on secondary school students.

The next chapter will describe the research design and rationale for the study design in exploring the research question. Chapter 3 will detail the variables for the study, the population, and the sampling strategy including a power analysis and justification for the effect size, alpha level, and power level. Chapter 3 will outline the procedures I used for participant recruitment, data collection strategies, and include an explanation of how I obtained data for analysis. Potential threats to validity will be examined and discussed.

Chapter 3: Research Method

This chapter includes the methodology and design of the present study. The purpose of the study was to add to the available literature regarding the assessment and identification of potential aggressive and violent youth within the secondary education settings. To accomplish this goal, I used the ARES to identify individuals with higher levels of internalized anger, externalize anger, and total anger to determine whether this stand-alone measure could discriminate between students who are aggressive and those who are not. The remainder of this chapter presents the population, sample size, sampling strategy, recruitment procedures, and data collection method. I also discuss how each variable was operationalized, the instrumentation used for the study, and how the data were analyzed.

Research Design and Rationale

I used a retrospective nonexperimental prediction design to gather data on a group of middle and high school students. More specifically, I compared assessment data from completed ARES measures with behavioral data from each student's cumulative school file. I used the students' scores on the ARES measures to determine whether correlations with aggression were observable. Retrospective data from cumulative files have been used in many studies and have been demonstrated to be an appropriate for making predictions about behaviors (Chu, Goh, & Chong, 2016; McGowan et al., 2011; Stockdale, Oliver, & Wong, 2014). Archival data allow for collection of data at different periods (Frankfort-Nachmias, Nachmias, & DeWaard, 2015).

The independent variables were the various scores on the ARES. These included the total score, Internalizing Cluster score, Externalizing Cluster score, and the Extent of Anger score. All of the independent variables were interval in nature. The dependent variable for this study was the aggressive behaviors exhibited by the students. The dependent variable was nominal. Possible mediating variables included age, gender, grade level, and ethnicity.

The initial data were gathered through a group administration of the ARES with completion taking less than 30 minutes. Time constraint was not a factor as the reminder of data were collected through archival data from each student's cumulative files. The use of archival data allowed for the collection of 1 year of behavioral data in a relatively short period.

Population

The target population for this study was Canadian students ages 12 to 17 years enrolled in general education and special education classes. In 2012, over five million students were enrolled in elementary and secondary public-school programs in Canada (Statistics Canada, 2014). Using these numbers as an estimate of school enrolment, I concluded that there were approximately 2.5 to 3 million students enrolled in secondary education programs at that time.

Sampling and Sampling Procedures

The sample for this study was drawn from four schools in a district of 112 schools located in a major Canadian city. Three of the four schools classified as traditional educational settings were selected randomly from a list of all schools in the district. The

fourth school, contained alternative/special education classes intended to meet the needs of students with emotional and behavioral challenges, was selected because of the higher rates of externalizing types of behaviors. Students placed in secondary settings often display higher levels of aggression, poor emotional regulation, and higher rates of impulsivity behavior. The alternative education site was also selected at random from a list of two possible alternatives schools.

Students selected for this study were between the ages of 12 and 17 years and were enrolled between 2017 and 2018. All students and their parents or guardians received information about the study and were asked to participate with a stipulation that only 100 students from each site would be selected. All students with parental approval were pooled and selected randomly. A combination of random sampling and purposeful sampling was used. The heterogeneity of the sample from the traditional schools combined with the homogeneity of students from the alternative school enhanced generalizability of findings to students as a whole and ensured sufficient data given the relatively low base rate of violence within schools.

I estimated that a sample size of 242 would be required to satisfy the purpose of the study when using the receiver operator characteristic (ROC) and binary logistic regression. Previous studies on assessing youth propensity for violence using the ROC included sample sizes between 87 and 674 (Hilterman et al., 2014; McGowan et al., 2011; Vincent et al., 2012). A ROC analysis is often used when attempting to test the performance and accuracy of an assessment tool (MedCalc, n.d). MedCalc, a statistical software product, was used for the power analysis. I used a power of .80, a value

considered adequate in most social science research. I used an alpha of .05 and my area

under the ROC curve to .725 indicating good predictive ability. I then set my null

hypothesis value to 0.5 indicating no discriminating power (chance). Lastly, I set my ratio

of negative to positive groups to 1/20. This meant that for every 20 individuals classified

as nonviolent, one individual would be expected to be violent. This value was obtained

from data in the Indicators of School Crime and Safety, which indicated that the violent

victimization and threat rate was around 3.7% to 7% (Zhang et al., 2016). Although a

minimum sample size of 242 was indicated, I planned to use a slightly larger sample size

of roughly 400 to account for potential base rate challenges that might arise.

Data Collection

To recruit students for this study, I sent letters to all parents and guardians in the

four selected schools outlining the intentions of the study. The letter included a

description of the research project and provided a space for the parents and guardians to

allow their student to participate in the study or decline participation in the study. The

parents and guardians who did not return a signed letter received a follow-up letter to

ensure they had the initial information regarding the study and the consent form. From

the list of students with parental approval, 100 students from each site were selected.

Selected students were informed of the study and were asked to provide their assent. All

students in the study and those who were not involved in the study were treated respect

and dignity.

Each participant was asked to complete the ARES assessment measure.

Additionally, each participant was asked to complete a demographic information sheet

(see Appendix C). Both the ARES measure and demographic sheet were completed during school hours at a time specified and permitted by each participating school site, most often during the lunch break. Students were invited to bring their lunches with them. Data were then collected from each participant's cumulative school file dating back 1 year. The files were reviewed for documented incidents of aggression. These included teacher write-ups, administration involvement, formal suspensions for aggression (both in school and out of school), and formal expulsions due to aggression. To gain access to student files, I completed an agreement form for access to personal information in addition to the parental consent forms. Study results were made available to any parents who wished to review them. Students and parents were informed that they could withdraw from the study at any time without consequence.

Instrumentation

The ARES is a self-report measure of anger developed for adolescents ages 10 through 17 (DiGiuseppe & Tafrate, 2011). The tool, which was based on the Anger Disorder Scale for adults, was developed in 2011 by DiGiuseppe & Tafrate with wording commensurate with the intended age. The measure was designed to assess clinical anger, not anger as a personality trait. The ARES is composed of 75 items that are broken down to create three domains or cluster. The clusters include Internalizing Anger, Externalizing Anger, and Scope of Anger. A Total Anger score is also provided.

The ARES has validity scales built in to detect those who attempt to minimize, distort, or hide their anger. Both a positive impression scale and negative impression scale are provided. These scales were developed from the normative sample and clinical

sample and represent rarely endorsed items or items that if endorsed are unlikely to be true (DiGiuseppe & Tafrate, 2011). The cutoff for the two impression scales is set at the 97.5 percentile indicating that endorsement of items on the impression scales is less than 2.5% based on the normative and clinical samples (DiGiuseppe & Tafrate, 2011). To test the effectiveness of the positive and negative impression scales, Lampert (2013) administered the ARES to 50 students in the seventh and eighth grade. Twenty-five students were assigned to the faking-good condition, and the other students were assigned to the faking-bad condition. Each of the students completed the measure twice, once answering honestly, and a second time answering based on their assigned designation (faking good or faking bad). The results indicated that the two impression scales were effective in distinguishing participants who were attempting to fake good or fake bad (Lampert, 2013).

The tool was normed on 800 self-report ratings. The sample contained 50 males and 50 females from each age group from 10 to 17 years of age, indicating that the sample was evenly distributed (DiGiuseppe & Tafrate, 2011). The sample was reported to be a close match to U.S. census data in terms of race and ethnicity. The norming data showed that males scored significantly higher than females in regard to Externalizing Anger, although the size of significance was small (DiGiuseppe & Tafrate, 2011). Age was also found to have an effect on Total Anger, Internalized Anger, Externalizing Anger, and Extent of Anger, with the 13 to 15-year-old group showing the highest totals (DiGiuseppe & Tafrate, 2011).

Reliability and validity research can be found within the manual and suggested that the test has excellent levels of internal consistency. Internal consistency for Total Anger ranged from .97 to .99, with the three clusters ranging from .87 to .97 (DiGiuseppe & Tafrate, 2011). DiGiuseppe and Tafrate (2011) also reported that the measure demonstrated high levels of discriminate validity with correct classification ranges from 86.8% to 90.8% for Conduct Disorder. DiGiuseppe and Tafrate reported that the measure showed a high degree of convergent validity with other measures that tested similar constructs (Conners Comprehensive Behavioral Scale and Jenson Inventory-Revised). Lastly, test-retest reliability for the ARES was between .58 and .92 (DiGiuseppe & Tafrate, 2011).

Research on the ARES has more recently been conducted related to various aspects of the tool. Neuhaus (2014) completed an item response theory analysis of the instrument using the data from the normative sample that DiGiuseppe and Tafrate (2011) used. Using a unidimensional graded response model on each of the subscales, Neuhaus found a reasonable goodness-of-fit. The data from the item response theory also suggested that when it comes to differentiating among various traits, each of the ARES items is effective, particularly when it comes to moderate and high levels of a trait.

Avigliano (2015) investigated 37 tools, both broadband and narrow band, used in the assessment of anger in adolescents and found that the ARES contained the most anger- and aggression-related items at 75. Avigliano placed the ARES tool in the excellent range with regard to norming. Additionally, the ARES received a rating of excellent with regards to internal consistency with a value of greater than .90. The ARES

was also rated as excellent regarding content and construct validity, indicating the test has clearly defined constructs with items that represent the construct being assessed (Avigliano, 2015). Avigilano also noted that the tools discriminate validity or validity generalization was also rated as excellent. Avigilano furthered that the ARES tool provided excellent detection of change over the course of treatment and good clinical utility. Avigilano reported that the ARES as a highly recommended tool for the assessment of anger and aggression in school-age populations.

Operationalization of Variables

Anger

For the purpose of this study, anger was operationalized in accordance with the ARES manuals T-Score breakdown of anger. More specifically, scores of 70+ were considered Very Elevated, scores of 65 to 69 were considered Elevated, scores of 60 to 64 were considered Slightly Elevated, and scores of 40 to 59 were considered Average. The described breakdown was used for the three cluster scores of the ARES (Internalizing, Externalizing, and Extent of Anger), as well as the Anger Total score.

Aggression

Aggression was defined as "behavior directed towards another individual carried out with the proximate (immediate) intent to cause harm" (Anderson & Bushman, 2002, p. 298). This included, but was not limited to, physical assaults, fights (with or without weapons), sexual assaults, and threats to cause bodily harm. A coded of "0" indicated that the youth displayed no aggression over the time period. A code of "1" indicated that the youth displayed one or more acts of aggression over the time period.

Data Analysis Plan

All demographic data, data from the ARES, and data from the student file review was organized and analyzed by this writer. The data was entered into the Statistical Package for Social Sciences (SPSS version 21.0). SPSS 21.0 has the functionality to conduct both Receiver Operator Characteristics and Binary Logistic Regression analysis. Both descriptive statistics and inferential statistics were run to answer the following research questions:

The central research questions (RQ) for my study are:

RQ1: To what extent does the ARES predict aggression and violence in secondary students in Canada?

H_o1: There is no significant relationship between ARES scores and violence in secondary students in Canada.

H_a1: There is a significant relationship between ARES scores and violence in secondary students in Canada.

RQ2: Which of the three anger subscales identified on the ARES (Internalizing, Externalizing, Extent of anger) discriminate between aggressive/violent adolescents and nonaggressive/nonviolent adolescents in this population?

H_o2: There is no significant difference between the three anger scales on the ARES in their ability to discriminate between aggressive/violent and nonaggressive/nonviolent adolescents in the population.

*H*a2: There is a significant difference between the three anger scales on the ARES in their ability to discriminate between aggressive/violent and nonaggressive/nonviolent adolescents in the population.

RQ3: Is there a relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence?

*H*o3: There is no significant relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence.

*H*a3: There is a significant relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence.

The first research hypothesis was that the ARES total score aids in distinguishing aggressive and violent students from nonaggressive and nonviolent students. The data analytical strategy used to address the first research hypothesis was a receiver operating characteristic (ROC). A ROC analysis measures the predictive accuracy of an instrument (Hart, 2015). The ROC analysis yields an area under the curve (AUC) from which the predictive strength of an instrument can be estimated. The AUC is created by plotting the true positives proportion (sensitivity) against the false positive proportion (specificity) based on a predetermined cut-off score (Mossman, 2013; Singh, Desmarais, Van Dorn, 2013). Scores of .5 represent chance level predictive ability whereas scores of 1.0 represent perfect predictive performance. AUC scores between .7 to .89 indicate fair to good predictive power, and any score over .9 reveals excellent predictive power (McGrowan et al., 2011). ROC analysis are intended to be used with data that have a continues predictor variable (eg. Total ARES score) and dichotomous criterion measures

(aggressive or nonaggressive). ROC analysis is frequently used in the assessment of risk (Singh, Desmarais, & Van Dorn, 2013). One reason for its frequent use is because it is less influenced by base rate and lacks reliance on a cut-off threshold (Mossman, 2013; Singh et al., 2013). One significant limitation of the ROC analysis is that samples with low base rates of violence could create and exaggeration of the area under the curve (Singh et al., 2013). All results were presented in AUC.

The second and third hypothesis were evaluated using a binary logistic regression. Binary logistic regression is an analysis that is used to determine the probability of an event occurring given the values of several independent variables (Fields, 2013). The independent variables in logistic regression can be categorical or numerical; however, the dependent variable must be binary (Fields, 2013). The independent variables in the current study were the total score and subscale scores on the ARES. Whether a student is aggressive/violent or not is the outcome or dependent variable. Results were interpreted using probability values and odds ratios.

Demographic Information

Demographic information that was collected for the current study included age, gender, grade, and ethnicity.

Threats to Validity

Internal validity is only relevant to studies that look to establish a causal relationship. In other words that evidence is produced that the changes in the independent variable have a direct impact on the dependent variable. There are several potential threats to internal validity in this study. The first threat is that all the data gathered from

the students is based on self-report. Despite assurances that data will be confidential,

some students may have felt hesitant to respond honestly. This threat is believed to be

minimized by the ARES validity scales. A second threat to internal validity is the

accuracy of which each test site documented incidents of aggression. Some schools may

formally document all incidence of aggression while other may choose to process less

serious incidents more informally. Any such informal processing may have impacted the

validity of the results. The last threat to internal validity was related to confounding

variable. Confounding variables are factors or variables other than the independent

variable that could have an influence on changes in the dependent variable. The presence

of confounding variables could provide alternative explanations for the outcome

(Frankfort-Nachmias et al., 2015).

External validity is concerned with the generalizability of the results. In other

words, how will the results of the study hold true for other people in different locations or

times (Frankfort-Nachmias et al., 2015). The major threat to external validity in the

current study is the selected sample. Because a true random sampling procedure was not

utilized, it is possible that the sample is not truly represented of all secondary students.

Additionally, it was not possible to determine if there were inherent difference between

parent and students who consent to participate in the study verse those who did not

consent to do so.

Ethical Procedures

A detailed description of my study was provided to a major metropolitan school

board including the nature of the study, the necessity of contact with students, the amount

of contact with students, and the need to access each students' cumulative file on the second phase of data collection. After I obtained written approval by the school Board and Institutional Review Board (IRB) through Walden University data collection began. The study design required contact with students, all of whom were under the age of 18, written consent was sought from the parents of each potential participant in line with the outlined requirements of the school district. The consent form were sent home to all the students in the four test sites outlining the study objectives, data collection methods, duration of the study, subsequent use of the data, the right to decline and withdraw, the potential risks and benefits, and incentives. Contact information was provided for parents if they had additional questions. Once consent had been granted, the assent of the students was sought. Information regarding the nature of the research was communicated to them in age appropriate language.

The nature of the study did not permit anonymity due to the need to link student ARES results with behavioral outputs during the school year. As such, to protect the privacy and confidentiality of the research participants each instrument was coded with a number, and each number correspond to a study participant. The document that links the code with the identifying information of the subject could only be accessed by this writer and was stored in a secure location separate from the completed assessment tools (Virginia Tech, n.d.). As an additional safety measure, once the ARES instruments were completed by the students, they were placed into an envelope that was sealed until the time of the second phase of data collection. All information was transported in a secure container and once coded electronically, all questionaries' were shredded.

It was expected that this study would present little to no risk to any of the study participants. None the less, any student bothered by questions found on the ARES instrument they were permitted to withdraw from the study without repercussions. Appropriate referrals to school personnel were planned for any student who requested or required support.

Summary

Chapter 3 detailed methodology for this retrospective quantitative non-experimental study. I provide details on the population, sampling procedure, and data collection method. A comprehensive breakdown of the instrumentation, including the reliability and validity of the measure was included. In Chapter 3 the variables to be studied were operationalized and the data analysis plan was outlined. Threats to internal and external validity also were highlighted. Lastly, the ethical consideration for the study were presented. Chapter 4 provides a more thorough examination of the various analysis and the results of the study.

Chapter 4: Results

The purpose of this retrospective quantitative nonexperimental study was to examine the predictive validity of the ARES in the identification of violent and aggressive behavior in a sample of secondary education students 12 to 17 years of age in a major Canadian city. I compared the ARES scores from students with aggressive and violent behaviors to those students without violent and aggressive behaviors. Violent behaviors were identified through a comprehensive file review.

Both the receiver operator characteristic (ROC) and binary logistic regression were used to examine the effectiveness of the ARES in identifying students who may pose a greater risk to behave in an aggressive and violent manner. All three research questions were selected to not only better understand the effectiveness of the total ARES score, but also to examine which of the three ARES clusters most effectively discriminates between aggressive/violent students and nonaggressive/nonviolent students in the population. Lastly, I sought to determine whether any of the eight Internalizing Cluster scores exhibited clinically significant predictive ability in identifying violent students.

Chapter 4 presents the results of the study. I also provide a detailed explanation of the data collection and data analysis procedures. The findings are organized by research question, with the corresponding data analysis technique described. I conclude with a brief summary of the results.

Data Collection

All of the schools in the School District were listed in an Excel document. Using random selection, I chose four schools. Although the study received district approval, each school principal had the final say as to whether the study could be conducted at his or her site. One principal declined to participate, and another principal felt the site would not be appropriate due to population and size. Therefore, I selected two additional schools, and their principals agreed to participate. Each school was provided with hard copies of the parent letter (see Appendix D) and the parental consent form. The forms were sent home with students to be reviewed and signed by their parents. Next, each of the four schools sent group e-mails to the parents containing electronic copies of the parent letter and parental consent form. A total of 4,400 parent letters and consent forms were sent out. At the time of data collection, 156 parent consent forms were returned. This represented a 3.5% return rate, which was substantially lower than expected. Of the 156 parent consent forms that were returned, 149 students provided assent to participate, but one student was excluded due to a low reading level.

Data collection at the four sites began on May 2, 2018, and concluded on June 14, 2018. Students were assessed in rooms made available by the school's administration. The students completed the surveys in a group setting on six different occasions (one test date for the first school, one test date for the second school, and two test dates for the third and fourth schools due to the number of participants) with students taking approximately 15 to 20 minutes to complete the ARES surveys. Student demographic information was gathered on the ARES survey. Following the students' completion of the

ARES surveys, I reviewed the cumulative files for each student to determine documented incidents of violence within the year.

All data collection was completed in accordance with the research plan presented in Chapter 3; however, due to an unexpectedly low response rate, the required sample size of 246 participants was not achieved. Although the 148-participant sample obtained for the study failed to reach the documented power analysis, it was close to the documented median sample size determined by Singh et al. (2013). Singh et al. (2013) examined 47 studies looking at the predictive ability of various violence instruments and found a median sample size of 164.

Before the analysis, the data were cleaned. Missing data were observed in several of the respondent's data including grade level, ethnicity, and total ARES scores. In addition, the variable Ethnicity had one miscoded case (i.e., a case coded as '0'). These cases were removed via casewise deletion. This resulted in a final data set of 138 valid cases. The removal of the 10 cases from the original data set of 148 cases via casewise deletion represented a 6.8% attrition of cases from the original data set.

Descriptive Statistics

The data for this study were obtained from surveys completed by students from the School District and a subsequent review of each student's cumulative school file. All students were between the ages of 12 and 17 and at the time of data collection were enrolled in one of the four test sites. Table 1 presents the frequencies and percentages for the sample with respect to sex, ethnicity, and violence. The total sample included 138 students. Of the 138 students used in the data set, 91 (65.9%) were male, and 47 (34.1%)

were female. Race/ethnicity was broken down as follows: 85 White respondents (61.6%),

17 Black respondents (12.3%), 26 Asian respondents (18.8%), five Hispanic respondents

(3.6%), and five respondents coded as other (3.6%). Concerning violence, 23 (16.7%) or

around 1 in every 7 students had violent incidents reported on their file. The ethnic

breakdown of the sample was slightly different from the national averages (ages 15 to 24)

in which the White population makes up 72.7% of the population, Blacks make up 4.7%

of the population, and Asians make up approximately 11% of the population (Statistics

Canada, 2016).

Table 1

Percentages and Frequencies, Study Variables

	Frequency	Percent
Sex of respondent		
Male	91	65.9%
Female	47	34.1%
Race/Ethnicity of respondent		
White	85	61.6%
Black	17	12.3%
Asian	26	18.8%
Hispanic	5	3.6%
Other	5	3.6%
Was respondent violent?		
Yes	23	16.7%
No	115	83.3%
	138	100.0%

Table 2 presents the descriptive statistics for the sample with respect to age, grade

level, ARES total scores, ARES Cluster scores (Internalizing, Externalizing, and Extent

of Anger), as well as the eight subscores that constitute the Internalizing Cluster. The

average age of respondents was 14 years and 3 months, and the average grade level of

respondents was 8.83. The average ARES total score was 53.20 (*SD* =8.84), indicating

that the mean scores for the group fell within the average or typical level of concern for

their age. The average ARES Internalizing Cluster score was 55.78 (*SD* = 10.18) falling

within the average range. The average ARES Externalizing Cluster score was 51.59 (*SD*

= 8.13), which also fell within the average range. The last of the cluster scores, the ARES

Extent of Anger Cluster, had an average of 51.75 (*SD* = 9.77) falling in the average

range.

Each of the eight Internalizing Cluster subscales fell within the average range

based on the score guidelines established by the test authors. Each of the eight

Internalizing Cluster are located in Table 2.

Table 2

Means and Standard Deviations, Study Variables

Variable	M	SD
Age of respondent	14.25	1.53
Grade level of respondent	8.83	1.54
ARES total score	53.20	8.84
ARES Internalizing score	55.78	10.18
ARES Externalizing score	51.59	8.13
ARES Extent of Anger score	51.75	9.77
ARES Arousal score	52.28	8.91
ARES Physiological Aggression score	51.55	8.86
ARES Cognitive Aggression score	52.93	9.83
ARES Rejection score	51.54	8.88
ARES Anger score	58.98	12.20
ARES Bitterness score	56.44	10.97
ARES Resentment score	55.88	11.11
ARES Suspicious score	55.77	11.22

Note: n=138.

Cronbach's alpha is a measure of internal consistency to evaluate a scales level of

reliability. The Cronbach's alpha range is 0 to 1, with scores closer to 1 indicating better

reliability. The alpha score on the ARES (total score) was 0.921, suggesting an excellent

level of reliability. This level was similar to the alpha reported by the test developers in

the ARES administration manual.

Evaluation of Statistical Assumptions

All of the statistical assumptions for the ROC analysis and binary logistic

regression were met. The sole assumption for the ROC analysis was that the dependent

variable was dichotomous, which was also the first assumption for the binary logistic

regression. The remaining assumptions related to the binary logistic regression. The

second assumption in the binary logistic regression was that there was independence of

observation, meaning that a respondent could not exist in both dichotomous fields at the same time (i.e. a person could not be violent and nonviolent at the same time). The third assumption in the binary logistic regression was that there must be two or more independent variables, which was satisfied. The fourth assumption stated that there could be no multicollinearity. In binary logistic regression, multicollinearity is observed when the chi-square results suggest the results are highly significant; however, the p value for all the independent variables is nonsignificant. This was not the case. Finally, binary logistic regression requires linearity of the independent variable and log odds. Linearity was achieved by creating a series of dummy variables for the Ethnicity variable.

Results of Research Question 1

RQ1: To what extent does the ARES predict aggression and violence in secondary students in Canada?

H_o1: There is no significant relationship between ARES scores and violence in secondary students in Canada.

H_a1: There is a significant relationship between ARES scores and violence in secondary students in Canada.

To test Hypothesis 1, I conducted a receiver operator characteristic (ROC) analysis to test the relationship between the ARES total score and violence with regard to secondary students. The ROC analysis yields an area under the curve (AUC) statistic, with AUC scores between .7 to .89 indicating fair to good predictive power, and any score over .9 indicating excellent predictive power (McGowan et al., 2011).

The ARES Total Score produced an AUC of .712 with a 95% confidence interval of .59 to .83. The AUC value was statistically significant (p = .001), indicating that the ARES provided fair to good predictive ability to differentiate between violent and non-violent students. The ROC curve for the ARES Total score can be seen in Figure 1.
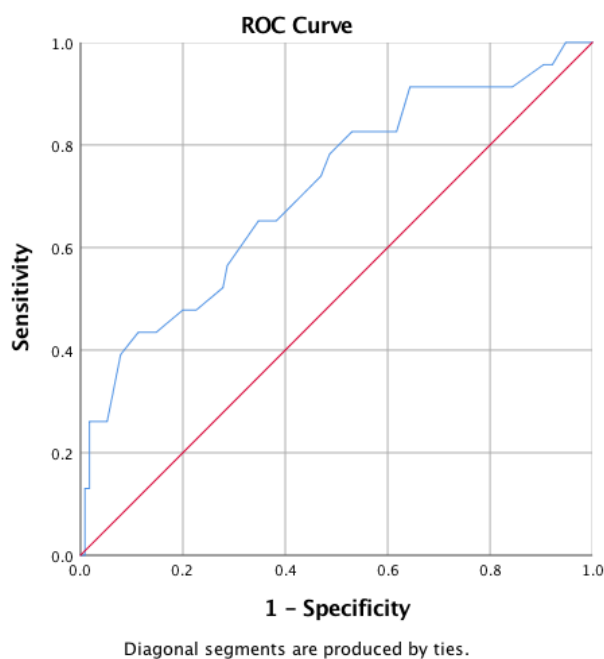
Figure 1. The receiver operator characteristic analysis and area under the cure for ARES total score.

Results of Research Question 2

RQ2: Which of the three anger subscales identified on the ARES (Internalizing, Externalizing, Extent of anger) discriminate between aggressive/violent adolescents and nonaggressive/nonviolent adolescents in this population?

H_o2: There is no significant difference between the three anger scales on the ARES in their ability to discriminate between aggressive/violent and nonaggressive/nonviolent adolescents in the population.

H_a2: There is a significant difference between the three anger scales on the ARES in their ability to discriminate between aggressive/violent and nonaggressive/nonviolent adolescents in the population.

To test Hypothesis 2, I used a binary logistic regression to identify whether any of the three anger scales (Internalizing Cluster, Externalizing Cluster, Extent of Anger Cluster) discriminated between violent and nonviolent students. The first parameter of interest was the Chi-Square Goodness of Fit omnibus test of model coefficients. As shown in Table 3, the omnibus test of model coefficients is statistically significant ($X^2 =$ 46.948 df = 10, p < 0.001). Decomposition of effects within the regression model could proceed. The proportion of change when all the independent variables were considered together, as evident by the Nagelkerke R^2, suggested that 48.6% the change in the dependent variable was the result of the independent variables. This suggests a relatively good model fit (Agresti, 2002).

Table 3

Binary Logistic Regression of Violence Onto the Predictors

Variable	b	Exp(B)	p
Age of respondent	-0.978	0.376	0.138
Gender of respondent	-3.861	0.021	0.005
Grade level of respondent	1.205	3.338	0.077
Race/Ethnicity of respondent: White	-1.928	0.145	0.129
Race/Ethnicity of respondent: Black	-2.011	0.134	0.196
Race/Ethnicity of respondent: Asian	-2.949	0.052	0.041
Race/Ethnicity of respondent: Hispanic	-1.131	0.323	0.517
ARES Internalizing score	-0.038	0.963	0.394
ARES Externalizing score	0.136	1.146	0.023
ARES Extent of anger score	0.058	1.060	0.164
Constant	-4.098	0.017	0.397
Chi-Square Goodness of Fit	46.948		0.000
Nagelkerke R^2	0.486		

Note: n=138.

Of the independent variables utilized in Model 1, three emerged as significant predictors of whether a student will behave violently or not. First, a negative and statistically significant relationship ($p < 0.01$) exists between a respondent's gender and whether or not the respondent was violent. For the variable gender, 0 was coded as male and 1 was coded as female. The results suggested that being female lowered the odds of being violent. Specifically, being female lowered the odds of being violent by 97.9%. The formula to derive this effect was $(e^{-3.861} - 1)(100) = -97.9\%$. Second, a negative and statistically significant relationship ($p < 0.05$) existed between whether or not a respondent was Asian and whether or not the respondent was violent. For the variable Asian, 0 was coded as not being Asian and 1 was coded as being Asian. The results

suggested that being Asian lowered the odds of being violent by 94.8%. The formula to derive this effect is $(e^{-2.949} - 1)(100) = -94.8\%$.

A positive and statistically significant relationship ($p < 0.05$) existed between ARES externalizing scores and whether or not the respondent was violent. The results suggested that higher ARES externalizing scores increased the odds of being violent by 14.6%. The formula to derive this effect was $(e^{0.136} - 1)(100) = 14.6\%$. Given the results, there was evidence to reject the Null hypothesis, as scores on the Externalizing Cluster appeared to have the ability to discriminate between aggressive/violent and nonaggressive/nonviolent students in the population.

Results of Research Question 3

RQ3: Is there a relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence?

H_o3: There is no significant relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence.

H_a3: There is a significant relationship between any of the eight internalizing anger clusters of the ARES and aggression and violence.

To test Hypothesis 3, I conducted a binary logistic regression to identify if any of the eight Internalizing sub-scales (arousal, physiological aggression, cognitive aggression, rejection, anger-in, bitterness, resentment, or suspiciousness) aided in discriminating between violent and non-violent students. The first parameter of interest was the Chi-Square Goodness of Fit omnibus test of model coefficients. As shown in *Table 6, the* omnibus test of model coefficients is statistically significant ($X^2 = 46.872$ *df*

$= 15, p < 0.001$). As such, decomposition of effects within the regression model can proceed. The proportion of change when all the independent variables are considered together, as evident by the Nagelkerke R^2, suggest that they make up 48.5% the change in the dependent variable. This suggests a relatively good model fit (Agresti, 2002).

As shown in Table 4, among the several independent variables in Model 2, only two emerged as significant predictors of whether or not someone was violent. First, a negative and statistically significant relationship ($p < 0.01$) existed between the respondent's gender and whether or not the respondent behaved violently. For the variable gender, 0 was coded as male and 1 was coded as female. The results suggested that being female lowered the odds of being violent by 99.3%. The formula to derive this effect is ($e^{-4.957} - 1$)(100) = -99.3%. Secondly, a negative and statistically significant relationship ($p < 0.05$) existed between being Asian and behaving violently. For the variable Asian, 0 was coded as not being Asian and 1 was coded as being Asian. The results suggested that being Asian lowered the odds of being violent by 98.7%. The formula to derive this effect is ($e^{-4.372} - 1$)(100) = -98.7%.

Table 4

Binary Logistic Regression of Violence Onto the Predictors

Variable	b	Exp(B)	p
Age of respondent	-0.320	0.726	0.652
Gender of respondent	-4.957	0.007	0.007
Grade level of respondent	0.787	2.197	0.266
Race/Ethnicity of respondent: White	-2.881	0.056	0.059
Race/Ethnicity of respondent: Black	-2.344	0.096	0.177
Race/Ethnicity of respondent: Asian	-4.372	0.013	0.014
Race/Ethnicity of respondent: Hispanic	-3.033	0.048	0.209
ARES Arousal Score	-0.695	0.499	0.351
ARES Physiological Aggression Score	0.401	1.493	0.361
ARES Cognitive Aggression Score	0.328	1.388	0.337
ARES Rejection Score	0.031	1.031	0.534
ARES Anger Score	-0.061	0.941	0.099
ARES Bitterness Score	-0.523	0.592	0.191
ARES Resentment Score	0.377	1.458	0.092
ARES Suspicious Score	0.349	1.060	0.111
Constant	-11.471	0.000	0.082
Chi-Square Goodness of Fit	46.872		0.000
Nagelkerke R^2	0.485		

Note: n=138.

The results indicated that there was no significant relationship between any of the eight internalizing anger clusters of the ARES with aggression and violence. As such, the null hypothesis was retained.

Summary

Chapter 4 provided a brief summary of the purpose of the current study. Chapter 4 also provided an explanation of the data collection, data analysis, and a detailed account of the study results, including the descriptive statistics, ROC analysis, and binary logistic regression. Significant results were found for the first and second research questions, but not for the third. Research Question 1 showed that the ARES Total score demonstrated a

moderate level of predictive validity with regards to distinguishing between violent and nonviolent secondary students. This suggests that using the ARES provides a significantly better than chance opportunity to correctly classify youth who have a higher propensity for violent behavior.

Research Question 2 revealed that of the three clusters that comprises the ARES, the Externalizing cluster was the only one the produced a significant correlation to the dependent variable (violence). The fact that the Externalizing cluster was significant is not all the surprising given that Externalized Cluster is intended to capture an individual's outward expression of anger. Finally, the results suggest that although they may be clinically useful, the eight subscales that constitute the Internalizing Cluster (Research Question 3) failed to reach significance. The following chapter will examine the implications of the current study's findings in more detail.

Chapter 5: Discussion, Conclusions, and Recommendations

The incidents of school violence, although on the decline over the last two decades, has continued to be a significant concern (Musu-Gillette et al., 2017). With over 966,000 nonviolent victimizations taking place in the United States in 2013, a decrease from prior years, an increasing number of students has expressed concerns about their safety at school (Kann et al., 2017). Previous research indicated a correlation between anger and aggression (Chereji et al., 2012; Kimonis et al., 2011; Roberton et al., 2014), but little research had been done to address these factors in the educational domain. The purpose of this retrospective quantitative nonexperimental study was to examine the predictive validity of the ARES in the identification of violent and aggressive students in secondary education settings in a major Canadian city. Better understanding the utility and applicability of the ARES tool in the secondary education school system regarding violence prediction was the aim of the study.

The results of this study indicated that the ARES Total score provided fair to good predictive ability to differentiate between violent and nonviolent students. Of the three anger clusters that constitute the ARES Total score, only the Externalizing Cluster indicated a statistically significant relationship ($p < 0.05$). Results also indicated that female and Asian students had lower odds of perpetrating violence. Lastly, none of the eight subscales that constitute the Internalizing Cluster were found to have a significant relationship with differentiating violent from nonviolent students.

Interpretation of the Findings

Analysis and Interpretation of Research Question 1

The first research question addressed the extent to which the ARES predicts aggression and violence in secondary education students in Canada. The ARES Total scores indicated that the ARES was able to distinguish between violent and nonviolent students at a rate significantly better than chance. These results were consistent with those from prior studies addressing the correlation between anger and violence. Moeller et al. (2016) noted that higher scores on the Novaco Anger Scale and Provocation Inventory (NAS-PI) correlated to an increased number of aggressive acts perpetrated by the sample, which included non-clinical and clinical male prisoners and forensic patients. The NAS tool also showed an application with adult psychiatric patients by effectively differentiating between patients who were violent and those who were not (Doyle & Dolan; 2006; Swogger et al., 2012). Cornell, Peterson, and Herbert (1999) reported that self-report anger measures such as the Trait Anger scale had moderate predictive ability (AUC= .72) in identifying institutional aggression in juvenile offenders.

A comparison of findings between the present study and previous research on the effectiveness of commonly used violence risk assessment tools for youth showed similarities. The current study indicated an AUC of .72 (95% confidence) when using the ARES Total score to predict violence. This AUC was almost identical to the AUC documented in similar studies using widely accepted violence risk assessment tools such as the SAVRY, YLS/CMI, and Psychopathy Checklist: Youth Version PCL:YV. In a 2016 study by Chu et al., the SAVRY was found to produce an AUC of .65, and the

YLS/CMI produced an AUC of .69 when looking at a sample of 165 young male

offenders with a mean 4.5-year follow-up. Another study conducted by Hilterman et al.

(2014) demonstrated an AUC with moderate effect size for the SAVRY (.75), the

Psychopathy Checklist: Youth Version PCL:YV (.72), and the YLS/CMI (.73). These

results suggest that when looking at the domain of anger, as captured by the ARES, even

in isolation of other known risk factors, the tool is able to generate relatively strong

violence risk appraisals. This supports prior findings of the positive correlation between

anger and aggression (Chereji et al., 2012; Fives et al., 2011; Kimonis et al., 2011;

Roberton et al., 2014). Taken as a whole, it appears that the construct of anger has

substantial application in the prediction of violence in a variety of settings, which

highlights the importance of better understanding the construct of anger and how it may

relate to the production of violent behavior.

Analysis and Interpretation of Research Question 2

The second research question addressed which of the three anger subscales

identified on the ARES (Internalizing, Externalizing, Extent of Anger) discriminate

between aggressive/violent and nonaggressive/nonviolent adolescents in this population.

The results of the current study indicated that only the Externalizing cluster provided a

statically significant result related to differentiating between violent and nonviolent

students. DiGiuseppe and Tafrate (2011) discussed the ability of the ARES to capture the

outward expression of anger, including acts of violence such as the physical aggression

domain. Some of the other domains captured in the ARES Externalizing Cluster may also

be linked to acts of violence such as revenge, impulsivity, and bullying. Kivivuori,

Savolainen, and Aaltonen (2015) suggested that the desire for revenge accounted for over

one half of interpersonal assaults in a sample of 5,373 youths. Closely related to revenge

is bullying, which Fluck (2017) suggested is primarily motivated by revenge and can take

on both verbal and physical forms of aggression. Lastly, impulsivity has repeatedly been

identified in the research as a strong correlate to anger (Ammerman, Kleiman, Uyeji,

Knorr, & McCloskey, 2015; Bousardt, Hoogendoorn, Noorthoorn, Hummelen, &

Nijman, 2016; Duran-Bonavila, Morales-Vives, Cosi, & Vigil-Colet, 2017). The findings

from the current study are consistent with previous findings, suggesting that violence can

be predicted by externalized anger.

Analysis and Interpretation of Research Question 3

The third research question addressed whether there was a significant relationship

between any of the eight internalizing anger subscales of the ARES and aggression and

violence. The results indicated no statistically significant differences. This result was

surprising given the evidence in the literature related to the impact that anger has on

cognitive processes and the associated correlation with aggression (Peters et al., 2015;

White & Turner, 2013). Previous research on the topic suggested that anger can lead to

rumination, deficits in the ability to attend to emotions (Roberton et al., 2014), and

changes in an individual's perceptions and decision-making (Pivetti, Camodeca, &

Rapino, 2015), factors that have been connected to aggressive behavior. Moreover,

Anderson and Bushman (2002) noted the influence that anger can have on priming

hostile thoughts and scripts and extending an individual's level of physiological arousal

or activation, potentially making a person more susceptible to provocation.

With reference to the internalizing subscales that compose the ARES, many appear to have an empirical relationship to aggression when considered separately. Ayduk, Gyurak, and Luerssen (2008) noted that participants who received peer rejection were more likely to behave aggressively. The link between rejection and aggression was hypothesized to be related to an individual's desire to return to homeostasis from being emotionally hurt to expelling that hurt by hurting others (Chester & DeWall, 2017). Chen, Drabick, and Burgers (2015) presented a slightly different explanation for the role that rejection plays in youths, noting that those who feel rejected have fewer opportunities for positive social interaction and consequently have deficits in social skills. Additionally, these individuals may have less opportunity to develop social empathy and may be more likely to behave aggressively.

Novaco (2017) suggested that an individual's likelihood of aggressive behavior is impacted by his or her level of arousal. Higher levels of arousal are believed to override inhibitory control and impair cognitive processes that would normally decrease aggression (Novaco, 2017). Novaco also noted that higher anger arousal contributes to cognitive distortions, such as individuals seeing relatively benign cues as attributions of hostile intent by others, which increases the likelihood of aggression. Using this same logic, higher levels of physiological and cognitive arousal, as captured by the ARES, would lead to increased levels of aggression, although the current study results did not support this conclusion.

Other factors captured in the Internalized cluster of the ARES, such as suspiciousness and resentment, also have reported correlations with aggression. Wong,

Freeman, and Hughes (2014) used a sample of youths ages 8 to 14 from the United

Kingdom and Hong Kong and measured their level of suspiciousness and mistrust.

Results indicated that youths with higher levels of mistrust or suspiciousness both at

home and in the community displayed higher levels of aggression. Bao, Haas, and Pi

(2004) showed a similar finding with participants experiencing a higher level of

resentment exhibiting higher levels of deviant behavior.

The results from the current study appeared not to align with some of the ideas

proposed in the general aggression model (GAM). According to the GAM, internal

variables such as cognition, affect, and arousal contribute to aggression (Anderson &

Bushman, 2002). These internal variables are believed to prime hostile and aggressive

scripts that are readily available when provoked. The GAM also describes a heightened

level of physiological activation that extends the time in which an individual may act out

aggressively. Findings from the current study related to the ARES internal variables did

not support these suppositions as none reached a level of significance.

Limitations of the Study

There were several limitations noted in the current study. These limitations

included the generalizability of the results due to the sampling frame, the small sample

size, and the use of archival data. Within the city of Calgary, there are two major school

districts: the Calgary Board of Education (CBE) and the Calgary Separate School Board

(CSSD), formally called the Calgary Catholic School District. The CBE is made up of

approximately 121,600 students who attend just over 240 different schools (Calgary

Board of Education, n.d.). The CSSD is about half the size with a student population of

approximately 55,000 students who attend 112 different schools (Calgary Separate

School District, n.d). The sampling frame for this study comprised all of the students in

the CSSD. There is a possibility that the sample, composed mainly of students with

Christian upbringings, may not have provided an accurate representation of students who

make up the culturally diverse country.

A second limitation of this study was the small sample size. Power analysis

indicated a sample size of 242. However, only 138 students participated in the study, a

number well short of what was anticipated, despite that fact that over 4,400 parent

consent forms were sent out. Due to the low number of students with parental consent, all

of the students with parental approval had to be included in the study. As a result, there

was no ability to randomly select students from those within the approved group. The

lack of randomization weakened the ability to generalize to the greater population.

Additionally, due to the low population at one of the behavioral schools, a traditional

school with a behavioral programs was used in its place. As a result, the sample may have

been more homogenous than initially intended. Had the numbers at the behavioral school

been higher, there would have been a greater mix of traditional versus

nontraditional/behavioral learners. This may have provided more representative data from

which to draw conclusions. One additional factor to consider concerning the small

sample size was the increased possibility of a type 2 error. The fact that more significance

within the variables was not found may have been a result of the limitations of the sample

size.

One final limitation was the use of archival data, which included the cumulative files that were maintained and organized by the individual schools. Archival research, which is increasing in popularity in the field of psychology, has a number of benefits such as allowing for larger data sets, capturing the effect of a variable over time, and decreasing experimental demands and artifacts (Heng, Wagner, Barnes, & Guarana, 2018). Despite these benefits, there are also some potential drawbacks. One important drawback relates to the validity and reliability of the archival data being used (Frankfort-Nachmias et al., 2015; Heng et al., 2018). In the current study, all of the behavioral data were taken from the student cumulative files that were maintained by each of the individual educational institutions. In reviewing these files, I noticed that there were differences in the manner in which information was organized, and the comprehensiveness with which files were maintained. It is possible that important behavioral data could have been omitted from the study due to missing records or procedural differences in the way each site documents incidents of aggression. For example, an incident that may have led to a documented incident at one school may not have triggered the same documentation at another school. It is conceivable that the results represent an underestimation of the violent propensity of students.

Recommendations for Future Research

The concern regarding aggression and violence in school systems does not appear to be fading. Therefore, continued research is needed in the area of violence and the conditions that give rise to it within schools. Researchers should continue to investigate the reliability and validity of the tools that they are using in the detection of violent

propensity in students. Given that prior investigations of the ARES revealed correlations between the tool and conduct behaviors in youth (DiGiuseppe & Tafrate, 2011), and that the current study provided evidence that the instrument has a mild to moderate level of predictive ability to discriminate between violent and nonviolent students, it might be useful to replicate this study using a larger sample size. An increase sample size would increase the power to detect differences between the two groups (violent versus nonviolent) and the confidence to generalize the results to the greater population.

Additionally, it may be fruitful to use a prospective research design as opposed to an archival retrospective design. For example, administering the ARES two or three times throughout the school year and then accessing the behavioral data at the end of the school year. This type of design would provide a researcher with increased control over how the behavioral data was collected. It would also potentially provide a researcher with greater understanding of how anger in students may change over a school year and its possible correlation with aggressive behavior.

Implications for Positive Social Change

The current findings provided encouraging support for the use of the ARES in the discrimination of violent and nonviolent students in schools. The use of the ARES instrument may aid in the early identification of students who have a higher propensity for aggression, and be used in conjunction with other violence assessment tools such as the SAVRY to strengthen predictions related to determining an individual's risk for violent recidivism. With regards to early identification, utilizing an empirically validated tool to assess for anger, one that provides insight related to future aggression, can aid

clinicians and educators in targeting those at the highest need and offer specific areas for which to focus their intervention and support. Intervention plans, based on the ARES data, would enable clinicians to create more individualized supports for students in need. The ability to proactively manage violent risk through early detection of potentially violent students may also contribute to the overall safety of schools.

Baker et al. (2008) suggested that clinician utilize empirically based instruments in their risk appraisals. These instruments aid clinicians in evaluating the factors known to be highly correlated with violent behavior. One of those known factors is anger and anger management ability. The current study provided additional support for the influence anger has on aggressive behavior by increasing knowledge about an important risk factor. Based on the study results, it is felt that the data from ARES measures could meaningfully be incorporated into an evaluators clinical battery of risk assessment tools. The ARES could also be used as a screener for students who may be experiencing difficulty integrating into the school culture. The addition of this knowledge to the scholarly literature is felt to be a step towards increasing safety in our schools.

Conclusion

Although violence in schools has been on a downward trend, the current rates still remain much too high (Musa-Gillette et al., 2017). In an effort to decrease the rates of violence within their schools, administrators have increasingly sought the support of mental health clinicians to assess their student's propensity for violence (Reddy et al., 2001). The literature in the field of violence risk assessment has evolved substantially over the past several decades with psychological tools used to assess the construct of

violence propensity become more specific and precise (De Bortoli et al., 2017). However, researchers have demonstrated that the task is far from a perfect science (Fazel et al., 2012). Although it is best practice to use multiple psychological assessment tools in conjunction with various forms of collateral information when evaluating an individual's risk for violence (Borum, 2006; De Bortoli et al., 2017), the current study findings are encouraging as they suggest that a sole variable, anger, can provide substantial information about a student's potential to behave in an aggressive manner. The ARES provides a relatively quick and inexpensive way to better understand anger and anger regulation capacities of secondary students.

Identification of students with higher levels of anger can optimistically provide increased opportunities to provide early intervention and engagement. Professionals utilizing the tool will not only be able to better understand the ways in which anger is processed by students, but also how it is expressed. With this new knowledge, I hope that those working in the school will be better equipped to reduce the occurrences of violence within their walls by using more targeted and effective treatments and interventions. With that being said, there remains much to learn about the influence anger plays on violent behavior, as well as the best approach to capturing and evaluating the construct.

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Appendix A: Demographic Information

Information

Client name/ID number: Client names will be changed to an ID number during data collection.

Age: The age of the youth at the time of the assessment.

Grade: The grade of the youth at the time of the assessment.

Gender: Male or Female

Ethnicity: Caucasian, Black, Asian, East Indian, Native Canadian, Other

Appendix B: Anger Regulation and Expression Scale

MHS has allowed six items from the ARES to be published within this dissertation. The following are a sample six sample items for the ARES measure.

Item 1. I feel anger I hide from others
Item 5. When I get angry at somebody, I think about ways to get even
Item 10. I get angry at people who make me look bad in front of others
Item 23. I argue with others to get what I want
Item 31. Get so angry with someone but instead of telling that person you
Item 53. Get so angry that it is hard for you to control your actions