Predictive Validity of CU Traits on Conduct Disorder-Related Antisocial Behaviors in Canadian Adolescents:
Advancing Understandings Relevant to the DSM-5 Specifier *With Limited Prosocial Emotions*

By:

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ABSTRACT

The cross-sectional study employed logistic regression models to test hypotheses and explore the relationships between callous unemotional (CU) traits and antisocial behavioral outcomes among a sample of Canadian youth. Four main predictive associations were hypothesized, suggesting significant direct links between CU traits and antisocial behaviors. Specifically, it was hypothesized that four CU traits, namely, thinking school is unimportant, having a lack of sympathy, failure to comfort distressed children, and engaging in cruel behaviors would serve as strong predictors of antisocial behaviors. Furthermore, the study sought to assess the predictive validity of additional participant characteristics, including age, gender, socioeconomic status (SES), and exposure to parental physical or verbal abuse. In addition to examining predictive associations and youth's characteristics, the study also explored the moderation of CU trait-antisocial behavior relationships by gender. Interactions between each of the four CU traits and gender were systematically explored to determine if gender moderated any of the CU-antisocial behavior predictive associations.

This study analyzed a nationally representative sample of 5,539 Canadian youth, nearly evenly distributed across three age brackets (10 to 11, 12 to 13, 14 years) and closely balanced on gender (49.9% girls, 50.1% boys). SES of the sample ranged from 14.3% in the lowest to 12.1% in the highest SES brackets. This study identified significant associations between CU traits and a multitude of antisocial behaviors among Canadian youth. Among these predictive associations there was a strong, statistically significant relationship between cruelty toward others and acts of aggression such as kicking, biting or hurting others (OR = 13.24 [95% CI 8.04, 21.80]). In terms of property destruction, this study again found that multiple CU traits led to increased likelihood of damaging of property (OR ranging from 2.08 [95% CI 1.62, 2.67] to 3.53

[95% CI 2.15, 5.76]), while violations of prosocial norms, such as school disobedience, were also predicted by a number of CU traits. Examining secondary hypothesized covariates further found that that age, gender, SES and parental behavior significantly influence antisocial behaviors. Among the findings, older children (OR = 0.54 [95% CI 0.46, 0.63]), were less likely to engage in fights, contrasted with boys (OR = 2.06 [95% CI 1.82, 2.34]), and those from low SES households (OR = 1.69 [95% CI 1.32, 2.16]). Further, those experiencing parental physical or verbal abuse (ORs ranging from 1.55 to 7.17), showed increased risk across antisocial behaviors, including property offenses and school disobedience. The propensity to lie or cheat increased with age (ORs from 1.32 to 1.50), and escalated with parental abuse (ORs from 1.55 to 3.32). Finally, this study investigated the interplay between gender and key predictors in antisocial behavior. A significant interaction was found between gender and the CU trait regarding the importance of school and disobedience in school. Boys who saw school as somewhat important (OR = 2.16 [95% CI 1.75, 2.55]) or unimportant (OR = 3.07 [95% CI 1.87, 5.04]) were more likely to be disobedient, while for girls, the risk was higher (OR = 2.95 [95% CI 2.32, 3.76]; OR = 7.74 [95% CI 3.65, 16.40]). This study contributes valuable practically and statistically significant findings to the existing Canadian literature on CU traits and antisocial outcomes by providing a nationally representative examination of their predictive validity among Canadian youth.

Finally, the findings have implications for Canadian social workers by providing increased understandings of early identification of, and subsequent interventions for, antisocial behaviors related to conduct disorder. Understanding the role of CU traits and other participant characteristics can inform more client-centred approaches to support justice involved youth.

DEDICATION

Dedicated to my mother and two brothers. Your individual perseverance and drive in your own lives continues to drive me to persevere in my own. All we have been through and all we continue to achieve. This one's for you.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

Abbreviation	**Full Text**
CU Traits	Callous Unemotional Traits
CD	Conduct Disorder
CP	Conduct Problems
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Volume 5, Text Revision
HR	Hazard Ratio
LPE	With Limited Prosocial Emotions
NLSCY	National Longitudinal Survey of Children and Youth
OR	Odds Ratio

Chapter 1: Introduction

Conduct disorder (CD) is a significant mental health disorder characterized by severe antisocial behaviors that violate individual rights (Frick et al., 2018). It commonly emerges during childhood or adolescence (American Psychiatric Association, 2013) and can have significant detrimental effects on individuals, families, and society. This study explores the clinical significance of CD in Canadian youth, with a focus on the predictive ability of CU traits. CD is a prevalent mental health disorder among youth in Canada, and its occurrence has raised concerns within the mental health field with approximately 5% of Canadian children and youth meet the criteria for CD (Statistics Canada, 2012). CD has been associated with numerous adverse outcomes, including academic underachievement, substance abuse, involvement in criminal activities, assaulting others, theft, rule breaking and increased risk for developing other mental health disorders in adulthood (Moffitt et al., 2018).

Advancing understandings of CD demands further examination of CU traits in the Canadian population. Youth with CU traits refer to a distinct subset of individuals characterized by a lack of empathy, deficient affect, and callous interpersonal behavior (Frick & Ray, 2015). Recent studies have highlighted the importance of CU traits in differentiating severe subsections of youth with CD, with implications for treatment planning and outcomes (Frick et al., 2018; Salekin, 2018).

Frick et al. (2018) examined the role of CU traits in understanding the heterogeneity within CD and found that individuals with CD and high levels of CU traits exhibit distinct, more severe behavioral profiles compared to those without CU traits; this finding has significant implications for social workers involved in psychotherapy, treatment planning and program development. Salekin (2018) conducted a meta-analysis investigating the association between

CU traits and treatment outcomes in youth with CD, revealing that individuals with higher levels of CU traits demonstrated poorer treatment response and higher rates of recidivism compared to those with lower levels of CU traits; this underscores the need for more targeted interventions that specifically address the unique characteristics and treatment needs of individuals with CD that present with CU traits. More recently, Kimonis et al. (2021) examined the longitudinal stability of CU traits and their association with functional impairment in a sample of adolescents with CD and found that CU traits were associated with a higher risk of functional impairment across multiple domains such as interpersonal relationships, academic functioning, and occupational outcomes. Furthermore, an increased understanding of the role CU traits play in predicting antisocial outcomes will allow Canadian social workers to address these traits prior to severe antisocial behaviours manifesting and resulting in harm to individuals, families, and communities. By identifying such predictive validity of CU traits in Canadian youth, targeted prevention and intervention programs can be developed by social workers and other allied professionals to reduce the burden of this disorder and improve long-term outcomes.

DSM-5

The DSM-5 (American Psychiatric Association, 2022) plays an important role for social workers in the mental health, psychotherapy, and youth justice sectors in Canada. It offers a standardized framework for assessing and understanding mental disorders, promoting consistency in clinical practice and communication across various care providers. We as graduate level social workers in Canada have become heavily involved in the youth justice and mental health fields. For those many social work clinicians in Canada engaged in psychotherapy, the DSM-5 guides the formulation of therapeutic goals and intervention strategies that consider the client's specific needs profiles. Within youth justice, the DSM-5 informs risk assessment and intervention planning, and the comprehension of court ordered psychological and psychiatric

assessments enabling social workers to address the complex needs of youth in the justice system with mental health disorders and serves as an essential resource for social workers for assessment and communication with other allied health professionals; however, concerns remain with previous and the current iterations of this diagnostic and assessment manual including cultural (Kriegler & Bromet, 2014) and gender relativity (Kamens, 2011), as well as overdiagnosis (Bolton, 2013). It is important that social workers continue to advocate for and provide research evidence to support a more preventative approach to mental health as opposed to a medical model of mental health that can lead to overdiagnosis, mental health stigmatization, and the potential for the unnecessary pathologizing of young people.

Conduct Disorder DSM-5

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5, 2013) recognizes the heterogeneity within CD with the sub specifier With Limited Prosocial Emotions (LPE), also referred to CU traits (American Psychiatric Association, 2013). Understanding the predictive validity of CU traits on antisocial outcomes may provide important early points of intervention for policy makers and social workers within Canada to begin focusing on for treatment of youth, especially in the youth justice sector. A CD diagnosis according to the (DSM-5, 2013), is contingent upon the presence of 15 criteria that are separated into the following four categories: aggression to people and animals; destruction of property; deceitfulness or theft; serious violation of rules.

CD is further presently based on the age at onset of the disorder. These age of onset groups can occur in a mild, moderate, or severe forms. An unspecified-onset subtype is designated when there is insufficient information to determine the age of onset of the disorder;

however, this unspecified subtype may serve as a too broad catch-all and is not always helpful to clinicians in the field making treatment and programming decisions.

CU Traits: With Limited Prosocial Emotions Specifier

The addition of this specifier to the CD diagnosis in the DSM-5 (2013) is to classify a specific subsection of antisocial youth with distinguishing psychopathic traits. This specifier includes four CU trait categories, only two of which must be met to allocate an individual into this new diagnostic category: lack of remorse or guilt; callous lack of empathy; unconcerned about performance; shallow or deficient affect; often these features can appear early on and may provide an important indicator that, left untreated, antisocial behaviours may manifest.

The first time CU traits were alluded to was in the DSM-III as an 'unemotional type' specifier; however, this specifier was seen as having a thin evidence base and was not continued in the DSM-IV (Scheeper et al., 2011). Subsequently, significant evidence supporting the clinical utility of a CU traits specifier to be including in the DSM-5, as a result of their ability to specify a particularly severe and enduring type of conduct disorder was provided by researchers such as Kahn et al. (2012), Frick et al. (2014) and Kimmons et al. (2015). However, at the time of inclusion in the DSM-5 some researchers continued to feel the evidence on the validity of CU traits remains weak (Lahey et al., 2013); similarly, and more recently researchers from Canada such as Dery et al (2019) continue to question the clinical utility of the CU specifier. The current study seems quite timely and significantly important to future iterations of the DSM-5, as it provides the first nationally representative Canadian study of the predictive validity of CU traits on antisocial behavioural outcomes in youth.

The Canadian Context

Mental health social workers in Canada are being utilized more in hospitals, youth justice, primary health care, and school settings for assessment and intervention, social work;

however, social work education in Canada has typically focused on generalist practice, which has created a dearth of training and knowledge as social workers transition from education into their careers in the field. As a mental health social worker working in multiple settings including acuate emergency care in a hospital setting as well as a director in the youth justice field, I know firsthand that significant post-graduate training was required of me including significant psychiatric supervision, to prepare me for the important role that Canadian social workers play within these sectors. This study lies at the cross-section of social work, psychiatry, and youth justice within the Canadian context, and it is hoped that this study may contribute to extending the literature for social workers throughout the country practicing in acute and chronic mental health environments who will be providing intervention and programming for youth with behavioural disorders such as conduct disorder and are tasked with ameliorating its consequences.

While there has been significant study into CD and antisocial behavior around the world, there is a significant dearth of investigations into the role CU traits play in antisocial outcomes within the Canadian population. In a recent systematic review of the role of CU traits on the development of youth with behavioral disorders, Squillaci and Benoit (2021) surprisingly only found two Canadian studies investigating CU traits. In pursuit of further peer-reviewed Canadian literature, I conducted a rapid systematic review across a number of interdisciplinary databases. Its exhaustive contemporaneous search range was 2000 to 2023. It included databases such as PubMed, OVID Medline, and the Cumulative Index of Nursing and Allied Health Literature (CINAHL). A broad exploration was also conducted in databases specific to social sciences such as Social Work Abstracts, Social Service Abstracts, and PsycINFO. Further, this synthetic study made use of additional resources, namely ERIC, and ProQuest Social Science and ProQuest

Dissertations and Theses Global to provide a comprehensive review of the research literature. Searches included various iterations of the following keywords or subject terms: Antisocial behavior, conduct disorder, callous and or unemotional traits; adolescent, child, youth, teen or teenage, and Canada. While several further studies were discovered beyond Squillaci and Benoit's (2021) systematic review, the current review also resulted in a dearth of research on CU traits in youth in Canada. Furthermore, none included a nationally representative sample.

Table 1
Studies of CU Traits and Antisocial Behavior in Canada

Reference	Antisocial Behavioral Outcome Measure	Sample Size
Crum et al., 2015	Student-Teacher Relationship Scale	1,554
Dery et al., 2019	DSM-5 Conduct Disorder Symptoms	264
Beitchman et al., 2012	Not Assessed	162
Wagner et al., 2018	Child Behavior Checklist	108
Rizeq et al., 2020	Child Behavior Checklist	81

Table 1 displays these Canadian studies including sample sizes and antisocial behavioral outcome measures. The largest study, Crum et al. (2015) investigated student-teacher-relationships throughout the school year within the context of conduct problems (CP) and CU traits. Participants were 1,554 children who were in one of seven elementary schools, representing 66 classes/teachers in a single school district of eastern Canada. This study's findings showed that children with CP and CU traits (CPCU) had significantly more conflicted relationships with teachers than either CP-only or CU-only. The study used the Student-Teacher Relationship Scale (Pianta, 2001) which is a measure of teacher-rated perceptions of the quality

of their relationships with students. The conflict subscale measured negativity versus warmth and openness. Consistent with previous research showing that children with CPCU tend to exhibit elevated rates of antisocial behavior (Frick et al., 2003), this study found that children with CPCU had higher rates of classroom behavior impairment at the end of the year. This study while the largest Canadian study in the literature, was not nationally representative and focused on the relationship between youth and their teachers. Further, the study focused upon the lone antisocial outcome of classroom disruptive behavior, which falls within only one domain of conduct disorder in the DSM-5. Disobedience in school will indeed be a variable included in the current study.

Wagner et al.'s, (2018) Canadian study examined if early CU traits in toddlerhood could predict the occurrence of externalizing problems when the children reached preschool age; however, they found that CU traits measured at two years were not directly predictive of externalizing problems at 4 years which was counter to existing, predominantly United States-based findings, in the literature (Frick et al., 2014). This small study was limited by its lack of statistical power and generalizability across the most relevant Canadian populations.

Another Canadian study by Rizeq et al., (2020) investigated associations and interactions between CU traits, measures of executive functioning, and behavioral outcomes in adolescents. But its primary focus was executive functioning. They found that CU traits did not moderate the association between verbal and nonverbal reasoning and antisocial behavior. Again, these Canadian findings were not consistent with other, predominantly United States-based studies that found that executive functioning moderated the association between CU traits and disruptive behaviors. While this study provided interesting implications in terms of further exploring CU

traits associations with antisocial behaviors in the Canadian population, with only 81 participants it was again quite limited by its lack of statistical power.

Beitchman et al., (2012) investigated genetic precursors to CU traits in a sample of youth from the greater Toronto area, finding that two genetic markers were associated with significantly higher CU traits than other haplotypes. The authors indicated that this was the first study that they were aware showed a significant association between CU traits in children and adolescents with extreme, persistent pervasive aggression. Finally, Dery et al., (2019) looked at the clinical utility of the CU trait specifier in the DSM-5 in childhood-type onset conduct disorder. Participants were part of an ongoing longitudinal study on children receiving school-based psychosocial services for conduct problems. These children were recruited from 2008 to 2010 in eight school boards located in four regions of the province of Québec. CD symptoms were assessed which aligned with conduct disorder symptoms from the DSM-5. The authors found that in regard to conduct disorder symptoms, no differences were found on the number of aggressive symptoms, nor on the total number of symptoms, nor on most symptoms of CD between children with and without CU traits. They concluded that their results suggest that the DSM-5 CU trait specifier may have limited clinical utility. However, this study was again limited by select recruitment strategies of a relatively small sample of youth from one province in Canada.

The knowledge gap is clear. No previous Canadian study has rigorously posed and confidently responded to the research questions posed here. Studying CU traits in youth holds clear implications for predicting conduct disorder outcomes and informing social worker assessment and intervention practices in the Canadian context. The age range of 10 to 14 included in this study aligns with the onset of adolescent conduct disorder as delineated by the

robustly evidence-based DSM-5 (American Psychiatric Association, 2022). CU traits such as lack of guilt and empathy, callous use of others, and being unconcerned about performance have been shown in the United States to be key predictors of more severe, persistent, and aggressive forms of antisocial behavior (Frick et al., 2014); however, as discussed above, in the Canadian context the few findings of the generally limited research has been much more ambivalent. In the context of this critical age range, where biological, cognitive, and social changes converge, advancing understandings about and early identification of these CU traits, in a nationally representative Canadian study could provide evidence for their ability to confidently predictive conduct disorder outcomes that are generalizable to the national population of youth. Additionally, identifying CU traits at this pivotal stage can facilitate targeted early interventions. Therefore, research efforts on studying CU traits in youth within this age bracket can contribute significantly to our understanding and management of conduct disorders, thereby positively impacting the mental health trajectories of at-risk youth.

The first or main hypothesis of this study proposes significant direct associations between CU traits and antisocial behaviors in Canadian youth. Previous, predominantly American research, has consistently shown that higher levels of CU traits are linked to increased risk for a range of antisocial behaviors, including aggression, rule-breaking, and conduct problems (Frick & White, 2008; Viding et al., 2012). Specifically, four CU traits are hypothesized to be strong predictors of antisocial behaviors: thinking school is unimportant, lack of sympathy, failure to comfort distressed children, and engaging in cruel, bullying, or mean behaviors. These traits tap into key affective and interpersonal dimensions associated with CU traits, which are expected to have a substantial impact on the manifestation of antisocial behaviors. Finally and serendipitously, the four CU traits mentioned here closely mirror the four DSM-based “with

limited prosocial emotions specifiers," and close proxy measures of them were available in the NLSCY.

In addition to the main predictive associations, this study seeks to explore the predictive validity of other participant characteristics available in the NLSCY dataset relevant to social work in Canada. Age, gender, socioeconomic status (SES), and exposure to parental physical or verbal abuse are established predictors and potential confounders that might influence the relationships between CU traits and antisocial behaviors (Dargis et al., 2016; Lynam et al., 2007; Pardini et al., 2008; Schrum & Salekin, 2006). Exploratory hypotheses propose that being younger, male, living in a low SES household, and experiences of physical or verbal abuse will be associated with increased risks for antisocial behaviors.

Furthermore, considering the potential moderating role of gender in the four CU trait-antisocial behavior relationships seems critical. Gender differences in, risks, manifestations and outcomes of CD have been well-documented, with males generally exhibiting greater risks and more prevalent aggressive to antisocial behaviors (Fontaine et al., 2011; Cale & Lilienfeld 2002; Keenan & Shaw, 2003).

The purpose of the present study is to provide evidence for the predictive validity of CU traits on antisocial outcomes in Canadian youth, primarily to provide social workers with further understandings of the importance that CU traits play in antisocial behavioural outcomes, so they may intervene more effectively. A secondary aim of the study was to potentially provide information relevant to the DSM-5 CU trait specifier, to inform future iterations of this manual that is used as a resource by Social Workers to communicate with allied health professionals; as a social worker, my aim here is preventative rather than diagnostic by providing evidence that may support early intervention.

This study builds upon previous research that has established associations between CU traits and antisocial behaviors. Frick and White (2008) emphasize the importance of recognizing CU traits as a distinct subdivision within CD and highlight their utility in predicting future aggression and conduct problems. Moreover, Viding et al. (2012) found that CU traits were associated with persistent antisocial behaviors and a higher risk of developing psychopathic traits in adolescence and adulthood. These studies support the notion that CU traits play a crucial role in understanding the developmental trajectory of antisocial behaviors.

As noted, nearly all of what's known in this field could be most fairly generalizable, thus far, to worldwide, non-Canadian places, best represented by the United States. Although highly suggestive, United States-based evidence cannot automatically be generalized to Canada because of their fundamental policy and social differences. An overview of previous reviews found that compared to the United States, Canada has lower income inequalities, higher per capita social spending and a more accessible health care system (Escobar de Jagajodhy, 2023). Differences in these social systems in Canada may, through an increased understanding of CU traits as prodromal or early indicators of CD, provide improved access to community mental health resources. Relevant country-specific data is necessary to formulate Canadian policies and interventions for early screening, as well as specific programming mandates in educational, hospital, and community settings. Furthermore, social workers may benefit from evidence that considers Canada's place in the ecological systems framework, as its own unique region in the world that considers the significant demographic and cultural differences between Canada, the United States (Statistics Canada, 2023; United States Census Bureau, 2023), as mental health symptoms, diagnosis, treatment, and the meaning of mental health can vary significantly between cultural groups (Kessler & Bromet, 2013). As such between-country differences may

impact population health, including mental health outcomes differently, original rigorous research in Canada seems most needed. Gratefully, an opportunistic nationally representative sample from the NLSCY Cycle 3 (1999) was made publicly available during the Covid-19 pandemic, at a time when this dissertation study was being designed and initially defended. Such publicly available, retrospective data sources offer invaluable opportunities for secondary research. The leveraging of these pre-existing datasets allow for the potential to uncover, important but previously unobserved relationships in Canada. Moreover, utilizing publicly available, Statistics Canada-funded datasets can significantly improve timeliness as they bolster resource allocation. Such efficiencies make secondary use of federally funded datasets a very appealing option, particularly for early-career researchers. They may also afford access to larger and more diverse samples than might be feasible through primary data collection, thus enhancing the external validity and generalizability of research findings. This study's sample of more than 5,500 youth provided an opportunity to capture the experiences of socioeconomically and otherwise diverse youth across the different regions of Canada. By examining youth with a wide range of CU traits and their antisocial behavioral outcomes, this study aims to advance understandings about these relationships that are generalizable to youth across Canada.

Finally, this study's potential to identify specific CU traits that may be important predictors of antisocial behaviors holds practical implications for interventions and prevention efforts. Specific interventions that address these traits, such as empathy training can potentially mitigate the risk of persistent antisocial behaviors, future antisocial personality disorder and facilitate prosocial development. Understanding the potential moderating roles of age, gender, SES and parental abuse, physical or verbal, of the relationships between key CU traits and clinically important antisocial behaviors will further inform the development of the next

generation of evidence-informed, interdisciplinary, including social work interventions in the field.

Chapter 2: Review of the Literature

Prevalence of Conduct Disorder and CU Traits

Historically, the male-female ratio of CD has been estimated to be between 3:1 and 5:1 (Boyle, 2002). As per the most recent data, the prevalence of CD among Canadian children between 4 and 17 years remains relatively stable at around 4% (Canadian Mental Health Association, 2023), a figure that aligns well with the previous estimates (Waddell et al., 2005). Moreover, significant gender disparities in CD manifestation seem to appear during adolescence, males demonstrating more aggressive conduct disordered behaviors, while females more often exhibit covert offenses and or such behaviors as engaging in prostitution (Côté et al., 2002).

Research also indicates that CD is among the most frequently occurring mental disorders among Canadian children (Waddell et al., 2005). In the United States, the lifetime prevalence of CD seems greater among males (16%) than females (9%) (Loeber et al., 2000; Nock et al., 2013). Internationally, the prevalence of CD seems to vary between the United States and Canadian estimates. For instance, a prevalence estimate of 5% has been reported in the United Kingdom among children and adolescents between the ages of five and 16 (Government of the United Kingdom, 2016).

Similarly, CU traits among children and adolescents have been gaining the attention of the global research community with an estimated global mean of 5% (Frick et al., 2014). In the United States, prevalence estimates vary substantially, with approximately 10% to 25% of community-based, young study participants observed to exhibit significant CU traits (Frick et al., 2014). There also seems to have been a marked increase in CU traits among justice-involved youth, with almost 45% displaying high CU traits (Kimonis et al., 2015). For reasons already noted, current sound national estimates of CU traits are not yet available in Canada. However, this study plans to provide certain initial such estimates. Internationally and unsurprisingly, CU

trait prevalence appears varied. For example, moderate to high CU trait prevalence estimates have ranged from 5.5% or 5.6% among boys in the United Kingdom and Germany (Kimonis et al., 2015; Pardini et al., 2006 [2.8% among girls]) to 9.2% among children in China (Fung et al., 2009). These geographical differences in prevalence warrant a comprehensive examination of diagnostic practices and potential international cultural differences in interpreting the symptoms of CD and CU traits. Such is beyond the scope of the present study.

Interpretations drawn from the current study, which leveraged a nationally representative sample, suggestively revealed that relatively mild CU traits, including only occasionally reported behaviors, may be quite pervasiveness and predictive among Canadian youth. Prevalence estimates of such milder CU traits ranged from 12.2% (is cruel) to as high as 60.6% (does not show sympathy). The scholarly and clinical significance of these seemingly common CU traits/symptoms will be expounded upon later with the presentation and discission of this study's findings.

Developmental Risk Factors for Conduct Disorder and CU Traits

Gender and Age

While a great deal of research has been undertaken with boys, there has been less research regarding CD in girls although, more recently, studies have begun to appear (2007; Côté et al., 2001). Historically, gender divides on conduct problems have been observed. For instance, during the first four annual assessments of the Great Smoky Mountains Study, a study of psychiatry epidemiology, boys were almost two and a half times as likely to meet DSM-IV-TR criteria for CD (odds ratio [OR] = 2.40; Costello et al., 1996). Such greater risks among boys have not always been observed, however. More recent research undertaken by Côté et al. (2011) found no significant gender differences on the two kinds of behavior problems that constitute the bulk of CD symptoms (aggression and property offenses) according to a combined parent and

youth report. However, these researchers did find significantly more oppositional behaviors among boys, indicating that gender contributed significantly to the prediction of antisocial behaviors among their study's participants. Côté and her colleagues (2011) also found a significant age by gender interaction in the reporting of property offenses. This interaction suggested that the direct association between age and engaging in property offenses is stronger among boys, that is, that the disparity between the proportion of boys and girls who engage in property offenses is probably greater among older than younger aged youth. This study also found the risks of a number of other antisocial behaviors/CD symptoms to be much greater among boys. This researcher group further found five such boys for every one physically aggressive girl. Finally, this group estimated that the prevalence of physical aggression among the general population of children and youth might be reduced by as much as two-thirds if the apparent additional risks among boys could be prevented or eliminated behavior (Côté, et al., 2011).

Age is also a seemingly robust predictor of CD. The frequency and severity of delinquency and violence generally increases with age until 20, and then declines (Barker et al. 2007; Lacourse et al. 2002; 2008; Loeber et al. 1993). While at the other end of the age continuum, prognoses are poorer and the likelihood of progression to full-blown antisocial personality disorder in adulthood becomes greater in cases of early onset CD (French National Medical Institute, 2005).

Research on CU traits has also revealed significant associations with both age and gender. Substantial empirical evidence underscores more prevalent such traits among boys. For instance, a study by Frick et al. (2014) reported that boys exhibited CU traits at almost twice the rate as girls. Similarly, Essau et al. (2006) found that 17.5% of boys compared to 9.2% of girls,

scored relatively high on measures of CU traits. Moreover, research has indicated that CU traits tend to exacerbate during adolescence, especially among boys. Fontaine et al. (2018) found a 30% increase in the severity of CU traits from early to late adolescence among boys, suggesting that this age period is crucial for the emergence and consolidation of CU traits. Pardini et al. (2007) reached a similar conclusion, observing a significant escalation of CU traits during adolescence among boys, again highlighting the importance of age as a critical developmental factor.

The role of gender in the manifestation of CU traits seems no less significant. While Frick et al. (2003) found that boys exhibited CU traits more frequently than girls, a pattern confirmed by Moffitt et al. (2001), this discrepancy might not only reflect different prevalence estimates but may also be influenced by societal norms and expectations that mold behavioral expression and perception (Facci et al., 2023). Despite the important insights gained so far, the specific pathways through which age and gender influence CU traits remain elusive. A more detailed understanding of these dynamics is necessary, offering the potential for enhanced intervention strategies. As such, this study includes an exploration of potential interactions between gender and CU traits in the prediction of antisocial behavioral outcomes. Moreover, age and gender have clearly each been identified as independent risk factors in this field. Therefore, they ought to be accounted for or statistically controlled in any study of newly hypothesized, independent predictors such as this study's CU traits and gender-CU trait interactions. This study will so account for them.

The notion of CU traits as a robust risk factor for conduct problems notwithstanding, certain aspects of age and gender might represent protective characteristics among youth and emergent adults. For example, research on the 'maturity gap' phenomenon has suggested a

decrease in antisocial behaviors as adolescents mature into adulthood (Moffitt, 1993; Rutter et al., 1998). Furthermore, few CU traits among girls and young women may point towards gender-specific protections (Zahn-Waxler et al., 2008), another related research area warranting further development.

Ethnicity and Socioeconomic Status

The empirical literature on disparities in the prevalence of CD between ethnic groups presents conflicting findings. Studies such as the 2006 National Comorbidity Survey reported slightly higher estimates of CD among White Americans than African Americans (Kazdin et al., 2006). However, that conclusion was contested by subsequent research, which in turn, estimated significantly more prevalent CD among African American youth (Bird et al., 2011).

Consideration of SES provides valuable insights into ethnic or racialized group discrepancies on estimated CD prevalence rates. Research by Lahey et al. (2005) demonstrated a robust direct association between living in lower SES households and neighborhoods and meeting DSM criteria for CD. This relationship suggests one plausible explanation for the disproportionate representation of African Americans in juvenile and adult prison populations (Elliott et al., 1986; Pettit & Western, 2004). Moreover, it raises critical concerns about potential bias in diagnoses and subsequent referrals to the criminal justice system. According to DSM-5, a diagnosis of CD should reflect an underlying condition within the individual and not merely a reaction to their immediate social environment (American Psychiatric Association, 2013). This perspective may disadvantage African American youth who, due to their greater exposure to social-environmental risk factors, may be inappropriately labelled with CD, their disproportionately oppressive representation probably ultimately leading to their greater losses of important life chances or opportunities. Research by Bird et al. (2011) comparing multiple

racialized ethnic groups, including White Americans, African American, and Island Puerto Ricans, yielded intriguing results. Despite Puerto Rican youth living under substantially worse SES conditions on the island of Puerto Rico, African American youth were more than twice as likely to be diagnosed with CD (OR = 2.60). Consistent with the Hispanic or Latinx health paradox theory, Bird and his colleagues (2011) theorized that the protective role of close familial attachments and extended family supports, called familismo, in the Puerto Rican community may have a more significant preventive impact on CD than socioeconomic factors have on its development (Escobar de Jagajodhy, 2023).

Historically, the prevalence of CD has been found to be higher among First Nations children and adolescents in Canada (Beiser, 1981; Green et al., 1981; Beiser & Atteave, 1982). A subsequent study by Dion et al. (1998) replicated this cultural divide, but this finding was complicated by other, concomitant findings. For example and of great interest, it was discovered that in assessing their students, indigenous teachers gave lower scores, less indicative of antisocial behaviors or CD, than did non-indigenous teachers. This differential rating pattern raises important questions regarding the role of cultural bias in the diagnosis of CD. While some studies have suggested more prevalent CD among the members of racialized/ethnic minority groups, these findings ought to be interpreted with caution. Factors such as SES, other familial factors, and bias in reporting ought to be considered in future research involving this complex and multifaceted risk factor. The current study will not be able to directly address this issue as the most recent, accessible NLSCY database did not include measures of racialized or ethnic groups. To the extend that relevant other measures were available (e.g., household SES), they will be incorporated into this study’s original analytic plan.

Again, a number of studies have produced disparate findings on racial/ethnic groups. For example, consistent with Bird and his colleagues (2006), Pardini and her colleagues (2007) found that African American boys had more prevalent CU traits than did White boys. Yet another study by Muñoz and Frick (2007) found that Hispanic youth exhibited similar levels of CU traits as did their non-Hispanic counterparts. Consistent with Bird et al., (2011), such supports the notion that CU traits are uniformly manifested across ethnic groups. And yet another study observed similar CU trait expressions among Black and Hispanic youth (Horan et al., 2015). In short, this field's findings on race are presently equivocal, perhaps confounded in a number of ways. First, the specific sociocultural factors that may affect the expression and interpretation of CU traits across diverse racialized/ethnic groups remain to be thoroughly explored as they have been missing from the analytic plans of numerous previous studies. Second, given that racialized/ethnic disparities in CU traits are probably impacted by socioeconomic and relates factors, it is essential to carefully account for or control their potential confounding and or independently predictive influence when studying newly hypothesized independent predictors (Fite et al. 2010). Especially in doing secondary research, the following seems essentially recommended. In examining new predictors in a field of study one ought to account for as many established predictors and as many potential confounds as is possible. This study will do so to the extent that the NLSCY allows.

Genetic and Biological Development

It was proposed that genetic predispositions to antisocial behaviors were not well-substantiated as initial evidence indicated that genetic factors do not play an important etiologic role in CD (Offord, 1989); however, more recent, natural scientific research has presented new and quite different understandings. For instance, Comings et al. (2012) found that 19 genes could

account for about 20% of the variability in CD symptoms. A number of studies have also looked at the genetic heritability of CU traits, and these studies found even larger variations in CU traits potentially accounted for by genetic factors, ranging from 42% to 68% (Bezdjian et al. 2011; Viding et al., 2005). Physiological markers have also been implicated in CU trait development. Specifically, Rijsdijsk et al., (2010) showed significant heritability of the development, or lack thereof, of certain regions of the brain that are probably implicated in the development of CU traits, that is, areas of the brain responsible for emotional regulation and self-control. Also, de Wied et al. (2012) identified heart rate as a straightforward CD biomarker of CD. Youth with CD and elevated CU traits showed significantly less elevation of their heart rates in response to emotionally evocative films than did youth with CD and normative levels of CU traits. Finally, a robust meta-analysis of 40 studies concluded that a slow heart rate, both resting and in response to a stressor, is a robust predictor of conduct problems (Ortiz & Raine, 2004). Lower heart rate seems, in fact, to be a strong biomarker for CD when individuals display associated CU traits (Ortiz & Raine). For example, Ortiz and Raine (2004) meta-analysis' pooled effect size suggested that 70% to 80% of the participants with CU traits had heart rates lower than did the typical participant without any CU traits. It seems apparent that genetic heritability does indeed act as a risk factor for both CD as well as CU traits—albeit through different sequences of genomic and physiologic abnormalities.

It is perhaps not surprising that such virulent CU traits predictive of such aberrant, persistent, and pervasive aggressive and uncaring antisocial behaviors would have a biologic component (Beitchman et al., 2012); this study, accomplished in the greater Toronto metropolitan area, reminds us however, that environments matter as well. After all, genes are expressed in environments, and advancing understands in both personal/biologic and

environmental/social domains may ultimately maximize our potential to effectively intervene. Imaging the great social and economic diversity represented in such a large and diverse urban centre as Toronto, one certainly would want to account for such environmental, especially socioeconomic factors when secondarily studying risks and protections in this field. This one will, as a validated measure of household SES is available in the NLSCY database.

Cognitive and Emotional Developmental

Teichner and Golden (2000) concluded that antisocial youth generally exhibit poorer executive and verbal functioning. These deficits included abstract reasoning and concept formation, sustaining attention and concentration, planning abilities, formulation of goals, initiating purposive sequences of behavior, inhibiting impulsive behaviors, and self-monitoring. Jones et al. (2010) compared boys ages 9 to 16 with conduct problems and high levels of teacher-reported CU traits to boys with conduct problems and normal levels of CU traits, boys with autism spectrum disorder, and normal control boys. While boys with conduct problems and elevated levels of CU traits showed less affective empathy for victims of aggression compared to boys in the other three groups, they did not differ from normal controls on cognitive perspective taking or problem-solving tasks. Such indicated that while cognitive impairment has been shown to be a risk factor for CD, individuals expressing CU traits do not seem to be inhibited in the same executive functioning abilities as those without them. de Wied et al. (2012) also found that youth with CD and those with CD who also have CU traits differed significantly in empathetic response to emotional stimuli. The CD/CU trait group reported significantly less empathic sadness than the CD only group. In short, a lack of empathy seems a defining characteristic of those conduct disordered youth with CU traits.

CU traits may also be associated with abnormalities in the processing of reward and punishment prompts. Specifically, CU traits have been associated with an insensitivity to such prompts (Frick, et al., 2003). Importantly, several studies directly compared children with conduct problems and elevated CU traits to children with conduct problems and normative levels of CU traits and these punishment abnormalities were only found in those with CU traits (Frick, et al., 2003). Also, when different punishment responses were compared, youth with behavior problems and high levels of CU traits responded slower to gradual incremental punishments than did youth with CD but normal levels of CU traits (Blair et al., 2001). Relatedly, youth with CU traits also seemed to underestimate the likelihood that they would be punished for their misbehavior (Pardini & Frick, 2013).

Finally, CU traits are associated with lower levels of fear and anxiety, especially when controlling for conduct problems. For instance, there is consistent evidence that youth with CU traits show emotional deficits in the processing of negative emotions such as fear and emotional distress (Blair & Coles, 2000; Kimonis et al., 2006; Loney et al., 2003). Cumulatively, these review findings provide evidence that children and adolescents with CD show different emotional and cognitive characteristics depending on whether or not they also display associated CU traits, underscoring the importance of including CU traits in this study.

Social Factors

It has been apparent for many years that family adversity indexed by poor familial relationships predict adolescent conduct disorder. For instance, in the Pittsburgh Youth Study, boys with CD tended to have parents with unhappy relationships (Loeber et al., 2018), while the Christchurch Health and Development Study in New Zealand found that children who witnessed violence between their parents were more likely to commit both violent and property offences

(Fergusson, 2008). Furthermore, Seehan and Watson (2008) found that there may be reciprocal associations between parenting and conduct disordered behavior. Specifically, the investigators found that conduct disordered behaviors such as physical aggression were quite strongly associated with an increase in parental aggressive discipline (r estimated to be between .57 and .61). That is, when parents use aggressive discipline, it tends to lead to an increase in child's aggression, compounding the original problem. Furthermore, Lacourse (2012) found that highly coercive parenting was strongly associated with a more severe subtype of CD (OR = 2.60). Relatedly, poor parental supervision has also been implicated as a predictor of CD (Holmes et al.,, 2001). Hawkins et al. (2003) found in the Seattle Social Development Project, that poor family supervision and inconsistent rules in adolescence predicted violence in young adulthood and that youth with non-intact, one parent families were more than three times as likely to develop more severe CD.

While harsh, inconsistent, and coercive discipline have been shown to be strongly associated with CD in youth, certain researchers have not observed such associations among youth with elevated CU traits. For example, in a study of 76 male offenders Edens, et al. (2008) examined the moderating role of the CU trait dimension of psychopathy on the relationship between parenting and behavior problems. A significant interpersonal CU psychopathic features by parenting interaction was observed such that the behavioral problem risks associated with coercive parenting seemed greatest among youth without elevated CU traits. On the other hand, another parental characteristic, low warmth, appears to be more highly associated with CD in youth with elevated CU traits (Pasalich et al., 2011). Finally, Salekin in his (2017) research review suggested that the formation of CU traits in young individuals is probably influenced by a complex interplay between their temperaments and the environments in which they're raised.

Surely parental/familial and household/community characteristics ought to be incorporated, to the extent possible, especially into any secondary study in this field. This one will do so.

Lastly, epidemiological studies have found that the most serious violent and non-violent antisocial behaviors tend to be concentrated in urban areas, mostly in disadvantaged urban neighbourhoods. For instance, Lacourse (2012) found that youth living in moderate to highly economically disadvantaged neighbourhoods where twice as likely to develop an aggressive type of CD than were other, less disadvantaged, youth. A key predictor of many health outcomes, a validated measure of household SES is available in the NLSCY and will be incorporated into this study's analytic plan.

Summary

As discussed youth experiencing severe conduct problems, accompanied by elevated CU traits, present an etiological profile marked by many interacting and distinct characteristics. These individuals typically exhibit impaired responsiveness to punishment cues and deficient reactivity to others who may be hurt or distressed. The distinctiveness in their emotional and cognitive processes set them apart, representing a markedly reduced emotional profile that may lead to more severe antisocial behaviors. Furthermore, these CU traits and conduct problems seem correlated with age, ethnicity, gender, genetic, parenting and socioeconomic factors. To gain more advanced understandings will require not only the examination of CU traits and antisocial behaviors, but also their interplay with age, gender, parenting strategies, and socioeconomic status. All will be included in this study. Unraveling these complex relationships may not only inform developmental trajectories leading to severe conduct problems, but also illuminate important heterogeneities, especially CU trait heterogeneities of this population in Canada. In short, by advancing our understandings about the predictive validity of CU traits

among diverse youth exhibiting various antisocial behaviors may pave the way for more targeted, and so, more effective interventions. Moreover, the scholarly behavior and practical ground in this field seems most fertile in Canada, where only a very small handful of relevant studies have ever been accomplished, seemingly none of them adequately powered as well as internally and externally valid (Squillaci & Benoit, 2021). This study will begin to fill this Canada-specific knowledge gap.

CU Traits as Predictors of Antisocial Behavior

While chapter one's introduction focused on the dearth of Canadian literature on CU traits, in terms of the broader worldwide research literature search a number of biomedical databases were searched from 2000 to 2023: PubMed, OVID Medline, CINAHL augmented by Cochrane Library resources. Interdisciplinary psychosocial databases were also searched: Social Work Abstracts, Social Service Abstracts, PsycINFO ,and ProQuest Social Science. Keyword and subject term search schemes focused upon various iterations of CU traits and antisocial behaviors or their synonyms (e.g., antisocial personality disorder, conduct disorder, criminal behavior, delinquent and so on). More than 800 articles were identified with more than 500 being relevant studies of CU traits and antisocial behaviors. Thirty-three of these studies quantitatively observed CU trait-antisocial behavior associations, estimating CU trait predictive validities.

The contemporary worldwide research brought a distinct correlation to light between CU traits and a spectrum of antisocial behaviors. Investigations into the influence of CU traits on the developmental trajectory of youth with behavioral disorders have revealed a consensus: CU traits are seen as substantial risk factors that may predispose such young people to future engagement in antisocial and aggressive behaviors. Alarmingly, these may even lay the groundwork for the emergence of an antisocial personality disorder and criminal conduct in adulthood. CU traits,

expressed in youth, seem potent harbingers of psychopathology, characterised by a lack of empathy, remorseless infliction of harm upon others, a lack of concern about performance, and a lack of emotional expression. Acknowledging the severity of these behavioral outcomes, the diagnostic LPE marker for CU traits has been incorporated into the DSM-5. This inclusion built upon earlier discussions of these traits in the DSM-III, where they were referenced in relation to the Conduct Disorder diagnosis as the 'undersocialized type' (Frick & White, 2008).

In this section of the literature review I present several key studies spanning the search period, an expansive list of corroborative studies can be found in Appendix A. It outlines all retrieved studies' methods and results. The decision to present only select research in the narrative was driven by the intent to strike a balance between comprehensive exposition and reader accessibility. Essentially, a rapid quantitative review or meta-analysis is presented in the text, a substantiating scoping review in the appendix. Both Grotzinger and colleagues (2018) and Hitti and colleagues (2019) linked CU traits with increased aggression, while Bird et al. (2019) found that children with CU traits had less concern for the consequences of aggression including anticipated feelings of remorse. Thomson et al. (2020) and Rizeq et al. (2020) found that youth with CU traits self-reported more antisocial behaviors and were diagnosed with more conduct problems. Kimonis et al. (2016) reported recidivism effects among 227 juvenile justice-involved adolescent boys. Boys high on CU traits were significantly faster to reoffend post-release both non-violently (hazard ratio [HR] 1.27) and violently (HR 1.54). Cross-validating, consistent effect sizes (or associations) across diverse antisocial behaviors or conduct disordered symptoms were statistically and practically significant (Andershed et al. 2002; 2018; Basque et al., 2012; Byrd et al., 2012; Catchpole & Gretton, 2003; Chabrol et al., 2011; Chauhan et al., 2012; Colins et al., 2012; Essau et al., 2006; Fanti & Kimonis, 2012; Kahn et al., 2014; McMahon et al.,

2010).

In short, the worldwide research literature allows for the following inferences. First, CU traits significantly predict a host of antisocial or conduct disordered behaviors as well as their less effective care and more prevalent recidivism among boys and girls, children and youth, with or without conduct problems. Second, among those with conduct problems, CU trait-antisocial behavior predictive associations may be deemed large, those youth with CU traits being about 50% more likely to engage in the most virulent antisocial behaviors. Third, such knowledge is essentially absent from the Canadian context highlighting the scholarly and practical importance of this nationally representative Canadian investigation.

As a social worker and director in the field of youth justice I can say with confidence that Canadian social workers will be able to immediately apply the results of this research to such efforts as funding requests as well as program development and evaluation efforts. I believe that those tasked with serving youth with CU traits will be empowered in their work together to ameliorate personal and familial problems and to minimize their involvement with the youth and adult justice systems.

Positioning & Theoretical Framework

As an administrator in youth mental health and youth justice, and a practicing mental health Social Worker in a Ontario tertiary care hospital, I've witnessed the complex challenges faced by youth justice populations in Canada in multiple levels of the ecological framework.

Youth involved in the justice system often have intricate comorbidities including mental health issues, neurodevelopmental conditions, substance use, and significant trauma in their family, school, and peer environments. My worldview has continued to develop as a practicing social worker in the field resultant of such experiences. It has been a personal challenge for me to fit into one theoretical or stance paradigm in my practice and in my research.

Positivism postulates that objective reality governed by laws can be applied to the explanation of all phenomena and that the researcher is able, through rigorous methods be made to provide an objective observation of pure cause and effect relationships in the world (Park et al., 2020). This approach from a social work perspective is both reductionist and unrealistic as applied to the world in which we provide support to those in an ever-changing and influential environment. While positivists aim to describe immutable laws of the universe objectively, we as social workers, through our work and personal interactions with clients understand that a move toward post-positivism and beyond is an intrinsic part of the research process. Post-positivism asserts that we must move beyond the empirical supposed purist observations of the scientific method (Morris, 2006) to acknowledge that our own biases and experiences shape the research process. In this study while CU trait predictive relationships with antisocial behaviours is measured and quantified I understand that these quantifications are only a portion of the experiential reality of the participants of this study within their own ecological environments. Further, my own experiences may factor into how I interpret aspects of the results and what that means for social workers and youth in Canada.

Also, including covariates in this study such as SES, gender, age, and parental abuse aid in developing this subject experience and their inclusion are a result of my post-positivist and interpretivist perspectives. Furthermore, my inherent biases also factor into my interpretation of results of this study, experiences, personal expectations, and my views of society at large, while attempts have been made to minimize through rigorous research design, as a post-positivists, are an inherent part of interpreting the results of this study. The post-positivist paradigm moves social workers toward an understanding that there will invariable be further external situations that may be impacting the results of this study, which is intrinsically linked to the personal

experience of those youth who are responding to the survey questions included in this study. The evidence produced from this study may provide important results; however, these results must be interpreted through a post-positivist and interpretivist subjective lens, as representing only a part of the truth and experiences of the study participants. Further, these findings although may be practically and significantly important to our profession are open to continued interpretation through service-user and research knowledge consumers. .

I have, and continue to believe there is utility in the incorporation of paradigms and theoretical perspectives as a social worker—the world is not a static place, our training, interactions, and personal experiences continue to shape who we are as social workers and as human beings, as we help guide our clients through challenges in their own lives that are impacted by the multiple levels of their individual ecologic environments, which leads me to conducting of this research through the holistic ecological perspective.

The ecological systems theory (Bronfenbrenner, 1979) is an important theoretical perspective used by social workers to frame our outlook both in research and in practice. This framework allows us to explain a multitude of factors including individual, relational, society, cultural among other environmental variables that contribute to an individual's experiences and development throughout the life course (Germain, 2010). More, this perspective allows us to understand that the environments that surround us through differing developmental and experiential periods can act as both risk and protective factors in our lives. The first layer of the ecological perspective the microsystem (individual/family) and mesosystem (interplay and relationships between microsystem factors) are represented in this study by the interpretive experiences of the youth who self-report their own perspective, which here have been used as the four predictor variables. Also, family relations such as parental physical and verbal abuse have

been included in the study and have been looked at in terms of their predictive validity on antisocial behavioural outcomes. These behavioural outcomes, while may reflect negatively on the youth perpetrating such behaviours, must be understood to some extent through the personal experiences these youth have endured that have, in part, led to these behaviours. The exosystem, which considers larger societal factors that may impact an individual, is represented in this study by SES, while and individual youth may not have control over their socioeconomic situation, the situation they live in may indeed influence their thoughts, emotions, and consequent behaviours. At the macrosystem level, which encompasses the larger sociocultural context, this study is the first nationally representative study focusing on CU traits and antisocial outcomes in Canada. It is important to consider such a study specifically in our country as Canada's unique socioeconomic and cultural environment, or mesosystem is unique and may influence outcomes differently in this area of study. Finally, at the chronosystem, which considers time as a component of an individual's environment, this study considers different age groups that can provide insight into how CU traits predict antisocial behaviours at different developmental stages.

Research Question and Hypothesis

The purpose of this study is to extend the research literature by evaluating the predictive validity of CU traits on conduct disorder-related antisocial behavioral outcomes in Canada. Other established independent predictors and or confounds uncovered through exhaustive literature searches will also be explored, including age, gender, SES, and parental verbal and physical abuse. Specifically, the following research question and hypothesis will be explored.

1. Do CU traits significantly predict antisocial behavioral outcomes among Canadian youth 10 to 14 years of age? Four main predictive associations were hypothesized.

Significant direct associations between four CU traits and eight antisocial behaviors were hypothesized. Specifically, each of the following four CU traits was so hypothesized:

a. Thinking school is unimportant

b. Not showing sympathy.

c. Not comforting an upset or crying child.

d. Being cruel, bullying or mean.

2. The predictive validities of other study participant characteristics were also explored in this unique context with these unique participants. These were established predictors and potential confounds that were available through the NLSCY: age, gender, socioeconomic status (SES), and exposures to parental physical or verbal abuse. Specifically, exploratory hypotheses were advanced such that each of the following characteristics were anticipated to predict antisocial behaviors:

a. Being younger.

b. Being a boy.

c. Living in a low SES household.

d. Having been physically abused by a parent.

e. Having been verbally abused by a parent.

3. Next, potential moderations of each of the CU-trait-antisocial behavior relationships by gender will be explored. There were 32 resultant gender by CU trait interactions on antisocial behavioral outcomes (i.e., 4 CU traits x 8 antisocial behaviors). In each instance, it was hypothesized that risks that attend youth with CU traits are greater among boys than girls.

Finally, it should be noted that each hypothesis test or exploration was systematically replicated across each of eight antisocial behaviors:

a) Getting into fights.

b) Reacting with anger and fighting.

c) Threatening others.

d) Kicking, biting or hurting others.

e) Destroying one's own things.

f) Destroying others' things.

g) Lying and cheating.

h) Being disobedient at school.

Chapter 3: Methods

This study drew on the National Longitudinal Survey of Children and Youth (NLSCY), the largest nationally representative survey of children and youth in Canada. Data was secondarily analysed from cycle 3's publicly available data file. It collected data in 1999 and provides an important opportunity to begin to advance understandings about CU traits and antisocial behaviors among youth in Canada during that period of time. The NLSCY is a longitudinal study of Canadian children and youth that provided data on their development from birth into early adulthood (Statistics Canada, 2012). The survey's purpose was to collect information on social, behavioural, and emotional development, including antisocial behaviours (Statistics Canada). The NLSCY also employs a nationally representative sample, enhancing the generalizability of its findings. Additionally and most importantly, the NLSCY has included a range of personally and clinically relevant measures such as CU traits and antisocial behaviors as well as diverse personal/demographic, parental/familial, psychosocial, socioeconomic and other covarying factors or covariates (Tonmyr et al., 2010).

Description of National Longitudinal Survey of Children and Youth (NLSCY)

The National Longitudinal Survey of Children and Youth (NLSCY), launched in 1994, is a collaborative endeavor by Statistics Canada and Human Resources and Skills Development Canada (HRSDC). The objective of the NLSCY is to build data source capturing the growth, health, and wellbeing of Canadian children from birth to early adulthood. But certainly, many social and behavioral scientists study their flip sides as well, that is, illness and distress among children, youth and young adults. A unique aspect of this survey is its focus on factors that may influence children's social, emotional, and behavioral development, including personal characteristics and certain aspects of family, school, and community environments (Statistics Canada, 2012). Such resources serendipitous allowed for the accomplishment of this study.

Target Population and Sampling

At its baseline the NLSCY used a multistage, stratified sampling design to select a nationally representative sample of 22,831 children, who at the time ranged from newborns to 11 year olds from across Canada's ten provinces. The primary strata used in the NLSCY were provinces, economic regions, employment insurance economic regions, census metropolitan areas, and urban and rural areas. The secondary strata included apartment frames and area frames. Finally household cluster delineation and dwelling selection was undertaken. Also, the NLSCY used post-stratification for gender and age representative categories. This survey design allowed for the generation of results generalizable to the broader Canadian population of similarly aged children and youth. Participants were initially surveyed in 1995, and have been followed every two years, thus far, up to 2009 when the survey was discontinued. The third cycle of the NLSCY was accomplished in 1999. At the time of study planning and design (dissertation proposal phase), it was the most recent publicly available version of the NLSCY. It is the panel that was secondarily analyzed in this study.

The NLSCY collects a broad spectrum of information pertinent to children and youth behavioral and developmental outcomes. For instance, data related to children's health, emotional health, behavior, social relationships, and cognitive development were gathered through interviews and self-reported questionnaires. Parents, teachers, and children themselves served as information sources, offering a comprehensive view of the child’s development. In addition to child-specific data, the NLSCY also captures socioeconomic information about the child's family, such as parental education, household income, and family structure (Statistics Canada, 2012). Moreover, the NLSCY holds particular promise for studying predictions of behaviour and behavioral outcomes. Its comprehensive and detailed measures of social,

emotional, and behavioral functioning make it one of the best suited Canadian surveys for examining the predictors and of different behavioral paths, including antisocial behaviors.

The NLSCY serves as an invaluable resource for cross-sectional, prospective and retrospective or historical analyses. These designs can support exploratory or hypothesis-testing research. The current study will be a historical survey with elements of both hypothesis exploration and testing. Its extensive data on various dimensions of child and youth development can provide unique insights into diverse aspects of children's lives during various developmental phases. The current study's focus is upon youth in a critical developmental phase between the ages of 10 and 14. For clinicians working in the youth justice system, exploratory studies leveraging the NLSCY data can be particularly informative. They can reveal factors that are most associated with antisocial behaviors, informing risk assessment and early intervention strategies. Additionally, while historical data has its limits, they may well guide present practices and future research. Also recall that this essentially 2000 study will be the first of its kind in Canada.

Data Accuracy

The NLSCY in Canada seems a reliable and valid source of data having employed rigorous data collection procedures. Given its fundamental role in shaping policies and practices to maximize child and youth health and development the credibility of its data is of paramount importance. A key element ensuring the NLSCY's data accuracy has been its use of multiple informants, including parents, teachers, and the children themselves, depending upon their age. This multi-informant approach provides a comprehensive understanding youth health and development increasing the overall reliability of the data. This ensures the consistency of data over time and enhances the reliability and validity of the constructs being measured (Statistics Canada, 2008). The survey's available longitudinal design also allows for repeated

measurements, contributing to data accuracy by minimizing measurement error. Of course self reported surveys have their limitations. But this one does not seem so limited for the following two reasons. First, its initial baseline participation rate was quite high at 22,831 youth. Second, losses to follow-up were quite low among the first three panels of the NLSCY (less than 5% lost to each successive panel). Of 26,000 eligible households, approximately 23,000 responded (Statistics Canada, 2008). It seems that the NLSCY's rigorous methodologies ensure the high quality of its data, making it a sound scientific resource for secondary data analysis.

Data Access

Statistics Canada provided access to a microdata file of the NLSCY for each year until its completion in 2008. The central analytic purpose of this study was to assess the predictive validity of CU traits on antisocial behavior outcomes and these variables were all available in the PUMF file available through the University of Windsor Data Centre, thus access to the Research Data Centre (RDC) was not required. Several variables were supressed by Statistics Canada to protect confidentiality, including country of birth, ethnicity and religion. The last publicly available data from the National Longitudinal Survey of Children and Youth (NLSCY) is Cycle 3, conducted in 1999. The underlying symptoms of CD have not changed from the DSM-IV to the DSM-5 during this time period and therefore this data continues to provide a valid representation of this disorder. Furthermore, understanding the manifestations of CD within the familial and sociocultural context of Canada 25 years ago may be an insightful baseline for comparisons of how this disorder is impacted by the significantly changed ecological environment within Canada at the micro, meso, and macro levels, in which this study is theoretically framed; such comparisons of historical studies may prove highly valuable (Talari & Goyle, 2020).

Despite later cycles being accessible only through a Research Data Centre (RDC), there are justifiable reasons for using publicly available data in this instance. First, using publicly accessible data was logistically simpler and less time-consuming. Accessing data through an RDC can itself be quite time-consuming, requiring submission of a detailed research proposal as well as submission of a full proposal to the university's research ethics committee. Also, the analytic process itself can be quite time-consuming with many students and faculty sharing a limited number of workstations in the RDC. These processes became much more complex during the COVID-19 pandemic. With the RDC closed for months at a time and periodically closed with the rise of COVID-19 cases, many worried about the plausibility of using RDC-based data to successfully accomplish a dissertation study. Consequently, my committee and I decided to use the publicly available NLSCY database. This did not seem particularly problematic for the following reasons. First, while many rigorous worldwide studies have been accomplished in this field, none have yet been accomplished in Canada, so the seemingly antiquated 1999 data seem not as worrisome. Second, the aim was to identify potential patterns and generate understandings to inform future investigations in Canada. Third and finally, despite being somewhat antiquated, the data from Cycle 3 was deemed highly valuable as it contained measurement proxies of all of this study's central CU traits and antisocial behaviors, and it was rigorously gathered from a very large sample of youth. The national generalizability and robust formulation of the 2000 NLSCY database seemed to allow for the rigorous first study of CU traits and antisocial behaviors among youth in Canada.

Finally, several studies have successfully used publicly available NLSCY data for important analyses. For instance, Costello et al. (2013) leveraged the data from the first three cycles to investigate the effects of socioeconomic status on the risk of major depression among

Canadian adults. Similarly, Guèvremont et al. (2007) used Cycle 3 data to explore associations between participating in organized sports and school performance among children. Publicly available, historical data from the NLSCY continues to provide crucial research understandings and future direction across disciplines.

Ethics

This research was expeditiously reviewed and cleared by the University of Windsor Research Ethics Board (see Appendix C).

Study Population and Sample Description

In total 38,035 children or youth less than 18 years of age were sampled in Cycle 3. Of those sampled children 1,089 (3%) were out of scope either because the respondent had moved permanently outside of Canada or because the household did not contain a child who was eligible to complete the NLSCY. The NLSCY used post-stratification of provinces, age, and sex, to create relatively even categories across age and sex that were still representative of the underlying population (Statistics Canada, 1999). Participants from NLSCY Cycle 3 10 to 14 years of age were considered for this study. The total study sample size was 5,539, insinuating, for now, much statistical power. Cycle 3 of the NLSCY provides both self-report and parent-report data, with children and youth aged 10 to 14 being included in the self-report group. This age group importantly aligns with the DSM-5 adolescent onset group, probably a particularly vulnerable group, that may begin to show antisocial behaviors beginning at about age 10. Among this key study group the NLSCY comprehensively covered and face validly measured its key CU trait predictors and antisocial behavioral outcomes as well as certain other covariates for their potentially confounding and or explanatory ability. Future studies may then study other, younger (young children) and older (later adolescents/emerging adults) groups.

Self-reported data is of particular importance when exploring CU traits as predictors of antisocial behaviors as we as social workers believe self-determining individuals, in this instance children and youth, are the experts of their own traumas, related experiences, thoughts and feelings, this falls in-line with my interpretivist worldview as a social work practitioner, which aids in capturing behavioural patterns (Pulla et al., 2018). Youth self-reported experiences allow for the examination of their internal states, which may not be readily observed by others, including parents. This seems particularly relevant when considering CU traits, which encompass personal attitudes and feelings such as lack of empathy and guilt (Frick et al., 2014). Relatedly self-reported data from youth can provide insights into antisocial behaviors that may not be known or accurately reported by parents or teachers. Thus, self-reported data from youth may offer a more accurate and in-depth perspective on their own emotions and behaviors. insinuates that there is significant statistical power provided in this study. All three of the study age groups were well and approximately equally represented: 10 to 11 (33.1%), 12 to 13 (33.4%), and 14 years of age (33.5%); as were the cisgenders of girls (49.9%) and boys (50.1%).

Measures

This study utilized 4 face valid proxy variables from the NLSCY that were matched to the CU traits LPE specifier in the DSM-5 (2013). This specifier was developed using the criteria described by Frick and Moffitt (2010) and included in the DSM-5. The Frick and Moffitt criteria of CU traits indicating a youth is without prosocial emotions (DSM-5) is the presence of two or more of the following CU traits (1) lack of remorse or guilt; (2) callous-lack of empathy; (3) unconcerned about performance; and (4) shallow or deficient affect. In the current study, four close proxy measures from the CU subscale of the APSD that corresponded to the four traits in the DSM-5 were used as CU trait predictor variables:

1. I am cruel, bully, or am mean to others

2. I comfort another young person who is crying or upset

3. How important to do well in school

4. I show sympathy

Kahn et al. (2012) tested the external validity of the DSM-5 features of the callous-unemotional subtype: lack of remorse or guilt; callous-lack of empathy; unconcern about performance at school, work, or in other important activities; shallow or deficient affect. They found that children and youth meeting criteria for CD and CU specifier in the sample exhibited greater cruelty toward others than CD alone, these findings provide increased external validation for the selected face valid proxy variable cruelty, bullying and meanness toward others. Furthermore, the coding, and systematic replication of all regression models on 8 antisocial outcomes show the same predictive trends for this CU predictor (albeit with increased effect sizes)—this is important as cruelty, bullying, and meanness toward others "sometimes or often" shows a severe repeated patter of behaviours that Blair (2005) linked to deficits in remorse. Further, Fanti et al. (2009) found that youth exhibiting bullying behaviour had marked deficiencies in both guilt recognition and remorse. Sutton et al. (1999) found that repetitive mean and cruel behaviours were associate with a lack of empathy, a cardinal feature of callous unemotional traits.

Main Predictors

While there is no current precedent for measuring CU traits with the NLSCY in Canada, building upon previous research by Frick and Moffit (2010) and others in the United States and elsewhere and aiming to closely match the specifier of CU traits in the DSM-5 (2013), I argue above and below with supportive literature that this study will use face-valid proxies of the four DSM-based CU traits. Resources and experience supporting this decision follow: the

DSM is the most utilized manual in mental health care, I have presented significant evidence in the literature supporting the selection of these proxies, and I have worked as a mental health social worker as a member of a psychiatric team in one of the largest tertiary care centres in Ontario and as a director in the youth justice field for more than 10 years.

I am cruel, bullying, or mean to others. This predictor was chosen to correspond to (1) lack of remorse or guilt, as noted above, for example, the individual is not remorseful after hurting someone or does not care about the consequences. The relationship between youth being cruel to others and exhibiting a lack of remorse has been investigated as both factors can contribute to negative social and behavioral outcomes (Frick et al., 2014; Viding et al., 2009). (Blair, 2005). As previously discussed there have been links between repetitive bullying and cruelty toward others and a lack of remorse and guilt. This lack of remorse coupled with a reduced ability to experience guilt can result in a greater propensity to engage in cruel or aggressive behaviors (Vaughan et at., 2023). As a centrally hypothesized predictor, “I am cruel, bulling, or mean to others” was coded as follows, retaining all of its original categorical information: referent group (never true = 0), (sometimes true = 1) and (often true = 2).

I comfort a child who is crying/upset.

This predictor was chosen to correspond to (2) callous lack of empathy, for example does not care about the feelings of others. A lack of empathy has been linked to various negative social and behavioral outcomes in children and adolescents in countries other than Canada (Frick & White, 2008) and a key aspect of CU traits is the diminished ability to empathize with others and respond appropriately to their emotional distress (Blair, 2005). Youth with CU traits may struggle to recognize or respond to the emotional cues of their peers, such as crying or expressions of pain (Dadds et al., 2009). This second centrally hypothesized predictor “I comfort

a child who is crying/upset" was coded as follows, again, retaining all of its original categorical information: referent group (never true = 0), (sometimes true = 1) and (often true = 2), which enabled preserving of all variable information.

How important to do well in school.

This predictor was chosen to correspond to (3) unconcerned about performance, for example does not care about school performance. Research has suggested that students who display CU traits may be more likely to have a disinterest in school and exhibit lower academic motivation (Horan et al., 2016). This lack of motivation can be attributed to their reduced ability to connect with others, which may hinder the development of positive relationships with teachers and peers, leading to disengagement from the school environment (Fanti et al., 2017). Moreover, these students may not experience guilt or remorse for not completing assignments or engaging in disruptive behaviors, further exacerbating their disinterest in school and academic pursuits. Additionally, CU traits have been linked to increased risk-taking behavior and poor decision-making skills (Blair et al., 2004) contributing youth' disinterest in school, as they may prioritize immediate gratification and engaging in risky behaviors over long-term academic goals. Thus, as with the other CU trait measures, previous research supports the predictive and construct validity of this measure as it has been used in predictable ways in other, non-Canadian contexts. It seems an important variable that should be accounted for as a CU trait predictor as it seems a very close proxy for one of the DSM-5 CU trait specifiers. As the third centrally hypothesized predictor this variable "How important to do well in school," was coded as follows: referent group (very important = 0), (somewhat important = 1) and combining the second most and most pathological categories together (not very/at all important = 2). Before recoding, less than 1% of the

respondents reported “not at all,” therefore, again nearly all of the original variable was preserved.

I show sympathy.

This predictor was chosen to correspond to (4) shallow or deficient affect, for example does not express feelings or show emotions. Empathy and sympathy are emotional processes that allow individuals to understand and share the feelings of others, promoting social cohesion and prosocial behavior (Eisenberg & Eggum, 2009); however, when these emotional responses are blunted, there may be implications for social functioning and negative behavioral outcomes. Such a deficient affect, as we are trained in mental health assessment, is a reduced or lack of emotional expression. Individuals with this presentation may present as cold or indifferent in situations where even strong emotional responses may be expected. The selection of the proxy comfort a crying or upset child, aligns with research indicating that the expression of emotions in such situations is damped in youth with CU traits (Kahn, 2012). This fourth centrally hypothesized predictor, “I show sympathy,” was reverse coded to make the least pathological category the reference group: (often true= 0), (sometimes true = 1) and (never true = 2).

Covariates

The inclusion of covariates is important to account for potentially confounding factors that could influence the relationship between predictor and outcome variables. By adjusting for such variables a clearer picture of the true predictor-outcome relationships can be observed. Additionally, covariates can increase statistical precision, reducing the standard errors of estimates and increasing the power to detect true effects (or associations). This means narrower confidence intervals around more precise point estimates (Austin & Stuart, 2015). Multiple theoretically informed, potentially confounding (or explaining), covariates were included in this

study. These covariates were analytically advantageous for an additional reason: They fundamentally also served as rough surrogates for certain sociocultural, family and personal dynamics that have been posited as potential determinants of antisocial behaviors. Their integration into this study may provide further insights into the lives of youth, particularly those with CU traits and or antisocial behavioral problems in the distinct sociocultural context of Canada.

Age. Age has been observed to be a risk factor in this field, with evidence that antisocial behaviors can emerge during early childhood and escalate during adolescence (Moffitt, 2018). But in certain contexts, it has also been observed to be a protective factor. For example, the age-crime curve, a well-established principle in criminology, has consistently demonstrated a natural decrease in antisocial behaviors as youth transition into adulthood (Sweeten, et al., 2018). Perhaps because of their increased cognitive development and social responsibilities, as youth mature, youth become less inclined to engage in antisocial behaviors (Vazsonyi, et al., 2017). NLSCY youth self-reported data on age were grouped as follows: 10 to 11 (reference group), 12 to 13, and 14 year olds. Certainly, age is a "third variable" that ought to be accounted for in any study of health, including mental health. In studying such a potentially risky passage in the lives of adolescents thought, it seems of paramount importance to do so.

Gender. Gender was also incorporated for its potentially theoretical and methodological importance. Numerous recent investigations have found, for example, gender differences in both the manifestation and impact of CU traits (Essau, et al., 2006; Pardini, et al., 2019). The observed risks have tended to be greater among boys, but such has not been unequivocally observed, suggesting that gender ought to be carefully considered in any new study in this field. Accounting for gender may not only be methodologically sound but may also contribute to a

increased understanding of the role of CU traits play in the development of antisocial behaviors among youth in regard to gender differences. Being female was the reference category.

Socioeconomic status. NLSCY operationalizes SES as a composite measure derived from annual household income, parents' or guardians' educational attainment and occupational prestige. This comprehensive measure provides a multifaceted view of SES, capturing various predictable aspects of socioeconomic advantage and disadvantage. In fact, the predictive and construct validity of this NLSCY measure of SES (i.e., low SES) has been well documented, showing its relationships with a host of ill health outcomes, including mental health outcomes (references?). This SES measure has also importantly been demonstrated to significantly predict antisocial behaviors among youth in other non-Canadian contexts (Piotrowska et al., 2019). Notwithstanding the centrality of SES, essentially to everything we do as social workers, for its intimate associations with most predictors and outcomes of interest to us, including this study's, it seems likely that any study not accounting for SES in some way probably has little hope of even approximating the truth. For power and consistency considerations, the NLSCY's original nine categories were recoded into a balanced five categories. The full distribution of the original SES index was thus retained, the highest SES quintile category was the reference group.

Physical and verbal abuse. Previous studies have established a robust association between physical abuse and the manifestation of antisocial behaviors. A longitudinal study by Lansford et al. (2017) found that physical abuse in childhood predicted higher levels of aggression and delinquency in adolescence. Clearly, such abuses are important covariates that ought to be accounted for in this study's analytic plan for their potential confounding and or explanatory effects. The NLSCY originally coded both such measures of physical and verbal abuse as follows: never, rarely, sometimes, often, and always. These were recoded into the

following three, more balanced categories: never (reference group), rarely/sometimes, and often/always. In both instances, the original "always" category was so rare as to be fatally underpowered.

Interaction terms. Recent research has highlighted significant gender differences in the manifestation and predictive influence of CU traits in non-Canadian contexts (Ezpeleta et al., 2020). Gender seems to consistently matter, but its influence is not always straightforward. For instance, while boys were more likely to report CU traits, the associations between certain of these traits and antisocial behavioral outcomes have sometimes been observed to be more pronounced among girls. Failing to examine such potential interactions with gender could risk oversimplification and potentially overlooking important gender-specific mechanisms. Furthermore, given that adolescence is a critical period of identity formation with significant gender differentiation, it again underscores the importance of examining how gender moderates the influence of CU traits on antisocial behaviors (or not). Therefore, the four gender by CU trait interactions were computed (gender [0,1] x CU trait [0-2]) and explored.

Outcome Variables

The present study's antisocial behavioral outcomes align closely with the criteria set out in the DSM-5 for CD include: (a) aggression towards people and animals, (b) destruction of property, (c) deceitfulness or theft and (d) serious violation of rules. This study's eight outcome variables all met these criteria, demonstrating an empirical congruence with one of the most well-researched manuals in mental health—the DSM-5. The selection of these behaviors as outcome variables, based on the robustly evidence-based DSM-5, substantiates their construct validity and applicability to this study (Hawes et al., 2005). Furthermore Herpers et al. (2012) investigated the construct of CU traits and its predictive validity for conduct disorder according

to DSM-5 criteria. Their study supported the idea that CU traits could predict a more severe and aggressive form of conduct disorder. Their use of DSM-5 criteria in their study as outcomes of CU trait predictors further substantiates their use here. In terms of aggression, the four measures of getting into fights; reacts with anger and fighting; threatens others; and kicks, bites, or hits others correspond to aggression towards people as these behaviors involve harm or potential harm to them. Destroys own things and destroys others' things correspond to the category destruction of property as they refer to purposeful damage of items regardless of ownership. Deceitfulness or theft are encapsulated by lies and cheats, which involve dishonesty and a potential violation of prosocial norms around truth-telling and cheating. Disobedience in school falls under the serious violation of rules category since it refers to the antisocial behavior of breaking established regulations in an institutional context like a school. All of the eight outcome variables were originally coded as follows: never true, sometimes true, or often true. These were all recoded into binary outcomes: (0 = never true) and (1 = sometimes/often true). This recode allowed for retention of the notion that ever having engaged in an antisocial behavior is unequivocally different than never doing so, while its binary construction allowed for observations of incremental, developmental behavioral changes that may include having a conduct disorder symptom or two, rather than merely focusing on the rare instances where youth are actually diagnosed with a conduct disorder.

Analytic Plan

Descriptive Statistics

In an effort to provide an accurate characterization of the study's sample, univariate frequency distributions were employed. Due to the binary nature of all outcome variables, and the discrete categorical nature of all predictor variables, including those directly hypothesized and covariates, concerns for parametric assumptions were unnecessary. Parametric statistics such

as means, medians, standard deviations, measures of skewness and kurtosis, and their respective standard errors, were rendered irrelevant in this context. The study sample was described, therefore, with simple frequency distributions.

Multivariate Analysis

Hypotheses were assessed, tested or explored, with logistic regression models. Given the binary nature of the eight outcome variables, logistic regression was deemed the most suitable for each of their respective analyses (Bewick, et al., 2017). The following model building plan ensured this study's adherence to the principles of parsimony and complexity. As for parsimony, simplifying the model, that is, removing nonsignificant variables from final models maximized statistical power, while helping to prevent model overfitting (Babyak, 2004; Harrell, 2015). As for complexity, any significant interactions were retained in final models. Each of the eight logistic regression model series—one for each outcome—was built in the following manner:

1. The initial step in the model building process involved the individual entry of all four CU trait predictors and five covariates into nine separate regression models. These were nine simple, logistic regression models, each examining the simple bivariate association of a single predictor with the outcome being analyzed. This step may facilitate identification of the initial, unadjusted individual contribution or predictive validity of each CU trait as well as each descriptor with the specific antisocial behavioral outcome being analyzed.

2. In the second step, all four CU trait predictors ("how important to do well in school," "I show sympathy," "I comfort a child who is crying/upset," and "I am cruel, bully, or mean to others") were entered into a single multivariable logistic regression model (Model 10). This model allowed for the observation of the independent contribution of each of the four CU trait predictors, controlling or adjusting for the independent contributions of each of the other

three CU trait predictors. This model also allowed for estimation of the combined effect of these traits on the antisocial behavioral outcome, providing a more comprehensive understanding of their collective predictive validity.

3. Thirdly, all five covariate descriptors were entered into the, above noted, model 10 (Model 11). A simple extension of the previous model, this one allowed for the observation of the independent contribution of each of the nine CU trait predictors/covariates, controlling or adjusting for the independent contributions of each of the other eight CU trait predictors/covariates. This model probably also allowed for better estimation and a more comprehensive understanding of the antisocial behavioral outcome.

4. The fourth step involved the removal of any non-significant covariates from the model (Model 12). This step in support of parsimony was crucial to avoid overfitting the model, thereby supporting its accuracy. Retaining all of the CU trait predictors as well as any statistically significant covariates ensured that the final model included only the most critical variables for predicting antisocial behavior outcomes, thus supporting the final model's validity.

5. Finally, the potential moderation of each of the main CU trait predictor-antisocial behavior relationships by gender were explored. In other words, each of the four gender by CU trait interactions were entered. Only significant interactions were retained in the final model (Model 11 or 12 depending). All nonsignificant ones were removed. Finally, any significant interaction was depicted or fully described.

In the final stages of this investigation, an exploratory logistic regression analysis (refer to Appendix D through K) was performed to dissect the more intense and virulent outcomes associated with CU traits. The results, though marked by less statistical power and in some unique instances (e.g., the rarest CU traits coinciding with the rarest outcomes) potentially

underpowered (as evidenced by wide confidence intervals), reveal a significant trend toward increased predictive power of more virulent CU trait presentations toward antisocial outcomes. It was important however to base this dissertation's primary analysis on a more inclusive coding strategy. Central to the strength of this study is this primary coding strategy, classifying CU traits into "sometimes" and "often" categories. This classification method serves two vital purposes: 1) It retains nearly all of the data information, preserving the subtleties and variances within the observations, and 2) It allows for intermittently presenting features of the disorder to be depicted as predictive of antisocial outcomes. Even when CU traits are manifested "sometimes," this categorization proves to be a powerful predictor. By defining the CU traits in this manner, the study not only accentuates the predictive validity but also opens doors for targeted intervention strategies, particularly acknowledging that even occasional exhibition of CU traits can be indicative of severe antisocial tendencies.

Logistic regression modeling principles and interpretations. First, the assessment of statistical and practical significance as well as the precision of the observed associations between predictor variables, covariates and outcomes, were assessed with odds ratios (OR) and their associated 95% confidence intervals (CIs). These measures of association strength and significance were estimated from regression statistics ($OR = e\beta$ and $CI = e(\beta \pm 1.96(SE))$). In terms of statistical significance, a 95% CI that did not include the null value of 1.00 indicated a statistically significant association (i.e., equivalent to $p < .05$). It should be noted that variables were coded in such a manner that ORs greater than 1.00 indicated relative risks, while ORs less than 1.00 indicated relative protections against undesirable outcomes. ORs estimate relative risks or protections and their practical interpretations are straightforward. For example, an OR of 3.00, related to the association between never showing sympathy and getting into fights could be

interpreted in the following manner: The odds, likelihood or chances of getting into fights (sometimes or often) were three times greater among participants who reported that they never showed sympathy than it was among participants who report showing sympathy often.

Second, any significant gender by CU trait interactions will be depicted in the text by reporting ORs within specific gender strata. For instance, a statistically significant interaction between gender and say, the CU trait of "never shows of sympathy, " again on "getting into fights sometimes or often" could be interpreted in the following manner. Generally, what this significant interaction means is that the CU trait-antisocial behavioral outcome associations differed significantly for boys and girls. For a practical understanding though, one needs to estimate those associations for boys and girls separately. For example, let's say these separate analyses found the following: The CU trait lack of sympathy-getting into fights OR was 4.00 for boys and 2.00 for girls. It would mean that though never showing sympathy was a practically significant risk factor for both boys and girls, it was twice as risky for boys. Boys who never showed sympathy were estimated to be four times as likely to get into fights (sometimes or often) than were other boys who often showed sympathy, and the risk was estimated to be much less, half in fact, among girls.

Third, although parametric assumptions are not a grave concern when building logistic regression models, it is still prudent to consider and assess for multicollinearity which could potentially compromise the nonparametric analysis. However, in this study's context, where all of the independent predictors, hypothesized or covarying, were categorical, the prospect of multicollinearity, typically a concern when building linear models, is unlikely. Regardless, to ensure model validity, the associations of all of the categorical predictors with each other were estimated with the chi square test statistic (χ^2). Cramer's V that typically approximates Pearson's

product-moment correlation coefficient (r) was then calculated: $V = (\chi^2 / N (k -1)½$. Cramer's V offers a more suitable solution for assessing multicollinearity when the predictors are categorical (Acock, 2018; Babbie, 2015; (Cohen, 1988; Hair et al., 2019). Essentially, the smaller the Cramer's V value, the less likely it is that multicollinearity poses an analytic problem.

To assess the possibility of multicollinearity, all possible associations between the nine independent predictors were calculated. The largest Cramer's V among all of them was 0.15. Using Jacob Cohen's (1988) guidelines for interpreting effect sizes (or association strengths), these associations would all fall around or under his categorical description of a 'small effect' (Cramer's V = 0.10), substantiating the argument that multicollinearity was a non-issue. In fact, in this instance it was nowhere near being a problem. Statisticians typically argue that for multicollinearity to be problematic bivariate predictor correlations (or Cramer's Vs) would minimally need to be in the range of .70 to .90. Finally, all analyses used SPSS, Version 29.0 (IBM Corporation 2022).

Power Analysis

Since this was a secondary analytic study of an available sample, statistical power calculations were completed post hoc using G*Power software (Faul et al., 2007). Assuming the ability to detect very small associations (R2 = .10 [model will account for 10% of the outcome variability], Cohen, 1988)), a statistical significance level of 0.05 (95% CI), a participant sample of 5,539 with 10% not responding (far more missing data than found for any of this study's variables), and up to 10 independent predictors in the model, study power was estimated to be 0.999 or 99.9%. This power analysis was systematically replicated to detect an even smaller effect (R2 = .05) with up to 20% missing data. Study power remained at 99.9%. The fairly standard power criterion used in the social-behavioral-health sciences is 80.0%. In other words, it is desirable to have a less than 20% chance of making a type 2 error or in having at least 80%

confidence in a null finding. This suggests that this study is robust to potential biases due to sampling error. One can be quite confident in both its statistically significant and null findings.

Missing Data

Missing data was minimal across all of the study variables. Three variables had no missing data, and all of the others were less than 5.0% missingness with these exceptions: “being disobedient in school (5.7%), "my parents get angry and yell" 6.4%) and "my parents hit me”" (6.7%). Less than 5% missing data is generally deemed acceptable, unlikely to introduce substantial bias into the results (Schafer & Graham, 2017). Even the unsurprising slightly higher missingness rates for the verbal and physical abuse proxies are not expected to significantly distort the findings given that research suggests missing data rates below 10% are unlikely to bias results significantly (Enders, 2017).

Still, additional procedures were applied to assure this. First, Little's missing completely at random (MCAR) χ^2 test was applied and found to be null for each of the eight primary analytic series (Little, 2017), suggesting that missingness was not systematically related to both predictors and outcomes and independently predicting so it was unlikely to have confounded this study’s findings. Next, the eight analytic runs on the eight study outcomes were run relatively liberally with missing data delete listwise (aggregated missingness ranged from 12.0% to 13.8% across the eight analytic plans). These are reported in the text. Then one demonstrative analysis was rerun on perhaps the most exemplary virulent and complex outcome, physical assaults (I get into fights), imputing missing data more conservatively with regression techniques using all of the study variables (see Appendix B). Providing a final conformation that missingness was unlikely to have confounded this study’s findings, corresponding point estimates ORs and CIs in the two analyses, listwise deletion versus imputation of missing data, were nearly identical, typically differing by less than one tenth of a decimal place.

Chapter 4: Results

Study Hypotheses

First, four main predictive associations were hypothesized among this sample of 10- to 14-year-olds in Canada. Generally, significant direct associations between CU traits and antisocial behaviors were hypothesized. Specifically, it was hypothesized that each of the following four CU traits would be so predictive:

- Thinking school's unimportant
- Not showing sympathy
- Not comforting an upset or crying child
- Being cruel, bullying or mean.

Second, the predictive validity of other study participant characteristics were explored. These were established predictors and or potential confounds that were available through the NLSCY: age, gender, socioeconomic status (SES), and exposure to parental physical or verbal abuse. Generally, their predictive validities and or confounding influences among this study's unique sample of participants were explored. Specifically, exploratory hypotheses were advanced such that each of the following characteristics were anticipated to predict antisocial behaviors:

- Being younger.
- Being a boy.
- Living in a low SES household.
- Having been physically abused by a parent.
- Having been verbally abused by a parent.

Third, the potential moderation of each of the main predictor-antisocial behavior relationships by gender were explored. Each of the four gender by main predictor or CU trait

interactions were explored. Finally, each hypothesis will be systematically replicated across each of the eight antisocial behaviors being studied:

- Getting into fights.
- Reacting with anger and fighting.
- Threatening others.
- Kicking, biting or hurting others.
- Destroying one's own things.
- Destroying others' things.
- Lying and cheating.
- Being disobedient at school.

Univariate Sample Description

Characteristics of this study's unique sample of participants; children, youth, their parents and households, are described in this section (Tables 2 to 6). These descriptive characteristics may themselves predict antisocial behaviors. Additionally, they set certain limits on this study's generalizability. After implementing the participant age restriction to children or youth 10 to 14 years of age, the resultant study sample was comprised of 5,539 children or youth. Their age and gender distributions are displayed in Table 2. The display demonstrates quite balanced distributions. The sample was represented by nearly equivalent thirds within each of the three age categories, 10 to 11 (33.1%), 12 to 13 (33.4%), and 14 years of age (33.5%). The sample also essentially identically represented girls (49.9%) and boys (50.1%). Such large and balanced samples bode well for this secondary study's analytic power, especially for its ability to confidently test and depict any significant interactions (e.g., gender by main predictor [CU trait]) that necessarily involve subsample analyses.

Table 2
Demographic Characteristics of Study Participants (n = 5,539)

Variable Categories	Sample Size	Valid Percent
Age		
10 or 11	1,833	33.1
12 or 13	1,849	33.4
14	1,857	33.5
Sex		
Female	2,763	49.9
Male	2,776	50.1

Note. No missing data.

Table 3
Socioeconomic Status of Participants

Variable Categories	Sample Size	Valid Percent
Socioeconomic Status		
Highest	672	12.1
High	1,105	19.9
Middle	1,657	29.9
Low	1,315	23.7
Lowest	790	14.3

Note. No missing data.

As methodologically noted, the NLSCY's computed SES measure was derived from several SES-component measures: annual household income, educational attainment and occupational prestige of the head of household as well as occupational prestige of their spouse or

partner (Table 3). Recoding of the original nine categories into five seemed to have the desired effect, that is, categorical subsamples were increased as was statistical power while retaining the full distribution of the original SES index. Consequently, the represented composite SES categories cannot be practically defined in such clear terms as, for example, “low-income” or “high educational attainment or occupational prestige.” However, it can be seen that the full distribution of relative SES categories, from lowest (14.3%) to highest (12.1%), seemed represented. Such will provide the opportunity to advance understandings in this field across diverse socioeconomic backgrounds. Finally, the lowest SES category probably fairly represents low-income households; the highest SES category, affluent households, with the vast majority of households probably representing the broad, lower to upper middle class in Canada (73.5%).

Table 4
Indicators of Parental Physical and Verbal Abuse

Variable Categories	Sample Size	Valid Percent
Parents Threaten or Hit Me		
Never	4,068	78.7
Rarely or sometimes	941	18.2
Often or always	160	3.1
Parents Get Angry and Yell		
Never	943	18.2
Rarely or sometimes	3,658	70.5
Often or always	584	11.3

Note. Parents threaten/hit (6.7% missing) and parents get angry/hit (6.4% missing).

Childhood traumas are potent predictors of a host of mental health problems. Gratefully, two close proxies of physical and verbal abuse were available in the NLSCY database (Table 4). It was estimated that approximately one-fifth of the child or youth participants (21.3%) probably

experienced some form of physical abuse at the hands of their parents as they felt threatened by them or were hit by them at least some of the time. While astoundingly, over eighty percent of the participants (81.8%) had probably been so exposed to verbal abuses in the home. Moreover, chronic such abuses were probably not rare as, respectively, one of every 34 participants (2.9%) and one of every nine participants (11.5%) reported near constant physical or verbal abuses. Such prevalent traumas reinforce the need to account for them in this study's analytic plan.

Table 5
CU Traits

Variable Categories	Sample Size	Valid Percent
Importance of Doing Well in School		
Very	3,982	74.4
Somewhat	1,228	23.0
Not very or not at all	140	2.6
Show Sympathy		
Often	2,104	39.4
Sometimes	2,857	53.5
Never	378	7.1
Comforts a Crying/Upset Child		
Often	2,577	48.7
Sometimes	2,211	41.7
Never	509	9.6
Cruel, Bullying or Mean		
Never	68	87.8
Sometimes	579	10.9
Often	4,642	1.3

Note. Importance of doing well in school and showing sympathy (< 3.6 missing), and comforting a child and being cruel/bullying/mean (≤ 4.5% missing).

This study's key hypothesized predictors, four face valid proxies of CU traits, are displayed in Table 5. Not unexpectedly, they seem relatively rare in their chronic forms among this study's sample of participants. For example, only about one of every ten participants or less expressed a consistent lack of demonstrable sympathy (7.1%) or a lack of empathetic understanding in the form of never comforting a crying or upset child (9.6%). Even rarer still, only about one of every 50 chronically think doing well in school unimportant (2.6%) and only one of every 100 participants reported that they are often cruel toward others (1.3%). Seemingly rare, still, at the population level, their estimated influence across Canada's population of more than two million 10 to 14 year olds, that is, their population attributable risk may be quite large (Statista Research Development, 2022). Moreover, in their less virulent forms perhaps, including the reporting of such behaviors sometimes, these CU traits seemed quite common, their prevalence estimates ranging from 12.2% (being cruel) to 60.6% (lacking sympathy). These are this study's centrally hypothesized risk factors if you will, and it seems that certain of their attendant risks may be grave.

Frequency distributions of this study's eight antisocial behavioral outcomes are displayed in Table 6. Again not unexpectedly and similar to the CU trait predictors, they all seemed quite rare in their chronic forms (i.e., participants reported that they engage in these behaviors often). For example, their prevalence estimates ranged from only 1.3% (kicks, bites and hurts others) to 4.2% (gets into fights, and reacts with anger and fighting), the most typical or median such estimate being 2.6%. Again similar to CU trait distributions, in their less virulent forms, including the reporting of such behaviors sometimes, these antisocial behaviors were not rare among this study's participating 10 to 14 year olds in Canada. In fact, their prevalence estimates ranging from 6.9% (destroys other's things) to 40.6% (lies and cheats); Mdn = 22.9%. This study

aims to advancing understands about the predictors of such behavioral problems and ultimately, related mental illnesses.

Table 6
Antisocial Behavioral Outcomes

Variable Categories	Sample Size	Valid Percent
Gets into Fights		
Never	3,935	74.3
Sometimes	1,142	21.5
Often	222	4.2
Reacts with Anger and Fighting		
Never	3,795	71.5
Sometimes	1,292	24.3
Often	224	4.2
Threatens Others		
Never	4,608	87.2
Sometimes	583	11.0
Often	91	1.7
Kicks, Bites or Hurts Others		
Never	4,643	87.5
Sometimes	597	11.3
Often	64	1.2
Destroys Own Things		
Never	4,245	79.9
Sometimes	856	16.1
Often	209	3.9
Destroys Others' Things		
Never	4,930	93.1
Sometimes	296	5.6
Often	68	1.3
Lies and Cheats		
Never	3,169	59.4
Sometimes	2,059	38.6
Often	107	2.0
Disobedient in School		
Never	3,815	73.0
Sometimes	1,237	23.7
Often	171	3.3

Note. All of the outcome variables had $\leq$ 4.6% missing data except for disobedience in school (5.7% missing).

Multivariate Hypothesis Tests and Explorations

Predictors of Getting into Fights

In this section of the analysis, multivariate logistic regression models are employed to find out whether the hypothesized predictors statistically and practically influenced antisocial behavioral outcomes. Results of the key hypothesis tests or explorations related to the first of the eight outcomes—getting into fights—are displayed in Table 7 below.

Primary hypothesis tests. Much support for the first and key hypothesis can be seen across the top of the table. For instance, the unadjusted, simple regression models 1 to 4 in the top left column of Table 7 found that even in their less chronic forms, that is, when engaged in only sometimes, all four CU traits significantly predicted whether or not the participants get into fights. Importantly, essentially replicating strong support for the first hypothesis across all four of the main predictors in their more chronic form; statistically significant, practically large and quite precise CU trait-getting into fights associations were observed. Those who never show sympathy (OR = 1.81) or comfort an upset child (OR = 1.90) were approximately twice as likely to assault others. And those who reported their belief that school performance is unimportant (OR = 3.01) or were often cruel, bullying or mean to others (OR = 8.39) were, respectively, three to more than eight times as likely to fight with others. These may be fairly deemed large to huge associations or effects in the social- behavioral sciences, providing strong support for all four of the main sub-hypotheses.

Moving across the table one next sees model 10 that tests the independent predictability of each CU trait adjusting for the predictability of the others. It clearly also largely supported the primary hypothesis. Though the strength of the CU trait-fighting associations were all attenuated, it can be seen that three of them remained significant in

both statistical and practical senses, relevant odds ratios ranging from 1.48 to 7.81. However, one

Table 7

Predictors of 'Getting into Fights' (Sometimes or Often): Logistic Regression Models (n = 4,829)

Predictors	Models 1 to 9[a]		Model 10[b]		Model 11[c]	
Categories	OR	95% CI	OR	95%	OR	95% CI
Main Predictors						
Importance of school (very)	1.00		1.00		1.00	
Somewhat	1.45	1.26, 1.68	1.24	1.06, 1.45	1.34	1.13, 1.58
Not very to not at all	3.01	2.13, 4.26	1.86	1.27, 2.73	1.75	1.15, 2.66
Shows sympathy (often)	1.00		1.00		1.00	
Sometimes	1.29	1.13, 1.47	0.99	0.86, 1.15	1.10	0.86, 1.18
Never	1.81	1.43, 2.30	1.03	0.77, 1.35	1.03	0.76, 1.38
Comforts an upset child (often)	1.00		1.00		1.00	
Sometimes	1.49	1.30, 1.70	1.29	1.11, 1.49	1.08	0.92, 1.27
Never	1.90	1.55, 2.34	1.48	1.17, 1.88	1.16	0.90, 1.50
Cruel, bullying or mean (never)	1.00		1.00		1.00	
Sometimes	5.73	4.78, 6.88	5.06	4.19, 6.10	4.34	3.54, 5.30
Often	8.39	4.98, 14.12	7.81	4.56, 13.38	5.55	3.07, 10.0
Covariates						
Age (10 or 11)	1.00				1.00	
12 or 13	0.75	0.65, 0.87			0.65	0.55, 0.77
14	0.54	0.46, 0.63			0.43	0.36, 0.52
Gender (female)	1.00				1.00	
Male	2.06	1.82, 2.34			1.89	1.62, 2.20
Socioeconomic status (highest)	1.00				1.00	
High	1.08	0.85, 1.37			1.05	0.80, 1.38
Middle	1.31	1.05, 1.63			1.26	0.98, 1.63
Low	1.38	1.10, 1.73			1.40	1.08, 1.82
Lowest	1.69	1.32, 2.16			1.54	1.16, 2.05
Parents threaten/hit me (never)	1.00				1.00	
Rarely or sometimes	2.32	1.99, 2.70			1.76	1.47, 2.10
Often or always	3.98	2.88, 5.50			2.01	1.35, 3.01
Parents get angry/yell (never)	1.00				1.00	
Rarely/sometimes	1.40	1.17, 1.69			1.30	1.06, 1.60
Often or always	3.47	2.74, 4.39			2.35	1.76, 3.15

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4,829, 87.2%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 3.24, p = .92. Nagelkerke R^2 = 19.6%.

of the traits, not showing sympathy, was no longer significant (i.e., confidence intervals included the null value of 1.00), whether expressed sometimes (OR = 0.99) or all of the time (OR = 1.03). The most predictive CU trait remained being cruel, bullying or mean (OR = 7.81). But one should be cautious in interpreting the null shows sympathy-gets into fights association. Such does not necessarily mean that that trait is unimportant. It could be that that trait has its effect through other CU traits with which it shares variance or, that it, in fact, significantly predicts. Finally, recalling that a lack of sympathy was the most prevalently expressed CU trait in either its more acute or chronic forms (60.6%, Table 5), it may remain a cardinal developmental symptom of such antisocial behaviors as fighting.

Secondary hypothesis explorations. Much support for the secondary exploratory hypothesis was also found. For instance, the unadjusted, simple regression models 5 to 9 in the bottom left column of the table found that all five of the covarying participant characteristics, as hypothesized, significantly predicted the antisocial behavioral problem of getting into fights. Again, statistically significant, practically large and quite precise predictive associations with fighting were observed. The categorical largest protection was found among older children or youth (OR = 0.54), while the largest such risks were found among boys (OR = 2.06), in low SES households (OR = 1.69), with parents who threaten and hit (OR = 3.98) and get angry and yell at them (OR = 3.47). Certain of these risks are again quite large, but they also suggest certain solutions through policy (SES) and clinical interventions (parental behaviors). These secondary predictive associations were all retained similarly in the final, fully adjusted regression model 11. Finally, diminishments of certain predictive associations, that is, those involving not comforting an upset child or being mean, between models 10 and 11 suggests personal, household and family of origin characteristics may account for a third to perhaps as much as two thirds of the

explanation for the development and effect of such CU traits.

Exploring gender by key predictor interactions. None of the four gender by CU trait interactions significantly entered the final logistic regression model on getting into fights. It seems that on this outcome the primary findings about the predictive influence of the four CU traits probably apply equivalently to boys and girls.

Predictors of Reacting with Anger and Fighting

Results of the key hypothesis tests or explorations related to the second of eight outcomes—reacts with anger and fighting—are displayed in Table 8 below. On this second antisocial behavioral outcome—which is indicative of aggression and assaultive behavior—significant support for the first and key hypothesis can be seen across the top of the table. It can be seen in the unadjusted, simple regression models 1 to 4 that even when the trait is displayed somewhat or sometimes, each CU trait is significant in its ability to predict whether or not youth will react toward another with anger and fighting. In terms of the more serious or chronic form of three of the four CU traits there is even stronger support for the main hypothesis. Youth who never show sympathy were more than twice as likely (OR = 2.06) and those youth who do not at all feel school is important were more than two and a half times as likely (OR = 2.60) to react with anger and fighting. Further support for this study's main hypothesis is seen in the middle-left portion of the table that indicates youth who would never comfort an upset child were nearly two and a half times as likely (OR = 2.34) to react with anger and fighting. The final CU trait cruelty, bullying or meanness toward others displays a very large effect on the outcome (OR = 7.09).

Table 8

Predictors of 'Reacts with Anger and Fighting (Sometimes/Often):' Logistic Regression Models (n= 4,843)

Predictors	Models 1 to 9[a]		Model 10[b]		Model 11[c]		Model 12[d]	
Categories	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.32	1.14, 1.52	1.02	0.74. 1.19	1.06	0.89, 1.24	1.05	0.89, 1.24
Not very to not at all	2.60	1.84, 3.66	1.52	1.03, 2.25	1.57	1.03, 2.40	1.60	1.05, 2.45
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.48	1.29, 2.59	1.06	0.92, 1.23	1.07	0.91, 1.24	1.08	0.92, 1.25
Never	2.06	1.63, 2.59	1.26	0.96, 1.65	1.25	0.94, 1.66	1.27	0.95, 1.69
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	2.14	1.88, 2.44	1.93	1.67, 2.22	1.54	1.31, 1.80	1.54	1.31, 1.80
Never	2.34	1.90, 2.87	1.93	1.52, 2.42	1.45	1.12, 1.86	1.45	1.13, 1.87
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	7.09	5.87, 8.56	6.45	5.30, 7.84	5.75	4.66, 7.09	5.74	4.65, 7.07
Often	5.74	3.49, 9.44	5.50	3.25, 9.28	4.54	2.55, 8.06	4.64	2.61, 8.25
Covariates								
Age (10 or 11)	1.00				1.00		1.00	
12 or 13	1.05	0.91. 1.21			0.97	0.82, 1.15	0.97	0.82, 1.14
14	0.70	0.61, 0.82			0.58	0.48, 0.69	0.58	0.48, 0.69
Gender (female)	1.00				1.00		1.00	
Male	2.67	2.36, 3.02			2.36	2.03, 2.74	2.34	2.01, 2.71
SES (highest)	1.00				1.00			
High	1.01	0.81, 1.26			0.95	0.73, 1.23		
Middle	1.09	0.88, 1.33			1.04	0.81, 1.31		
Low	1.18	0.95, 1.46			1.16	0.90, 1.31		
Lowest	1.35	1.07, 1.70			1.23	0.93, 1.61		
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	1.89	1.62, 2.19			1.33	1.11, 1.59	1.34	1.12, 1.60
Often	2.79	2.02, 3.84			1.81	1.20, 2.73	1.84	1.22, 2.76
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	1.80	1.49, 2.15			1.79	1.45, 2.19	1.77	1.44, 2.17
Often	3.05	2.41, 3.86			2.10	1.56, 2.83	2.08	1.54, 2.71

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Participants with valid data on all variables were included (86.2%).[a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. [d] Nonsignificant covariates removed. Little's MCAR χ^2 (1) = .004, p = .95. Final model fit the data well: Hosmer and Lemeshow goodness-of-fit test χ^2 (8) = 7.51, p = .48. Nagelkerke R^2 = 22.0%.

Moving across the top of the table to model 10, which shows the predictability of each CU trait adjusted for the predictability of the others, one sees continued support for the main hypothesis. While the strength of the CU trait-react with anger and fighting associations were weakened, three of the four traits remained statistically and practically significant (ORs ranged from 1.52 to 6.45). And it was again observed that one of the traits, not showing sympathy, was no longer significant. Again though, this may be indicative of the sharing of variance across traits suggested by the fact that in the unadjusted model we saw a large effect of being sympathetic (OR = 2.06).

Secondary hypothesis explorations. Again in the unadjusted, simple regression models 5 to 9 in the bottom left column of the table there was further support for the secondary hypothesis that covarying participant characteristics would predict antisocial behavioral outcomes. Being older, that is, 14 years of age, again seemed protective, estimated to be 30% less likely to react with anger and fighting than were younger study participants (OR = 0.70). And again consistent exploratory support was observed for all of the other secondary hypotheses. Boys (OR = 2.67), youth living in the lowest SES households (OR = 1.35), and youth who were probably exposed to physical (OR = 2.79) and verbal (OR = 3.05) abuse, all experienced relative risks of reacting to others with anger and fighting. All of these secondary predictive associations (age, gender, and physical and verbal abuse) except SES were retained in the final, fully adjusted regression model 12. Declines of the predictive associations of comforting a child who is upset, and cruelness, bullying, and meanness between models 10 and 12, suggested that that age, gender, and physical and verbal abuse may account for approximately a quarter to half of the risk associated with these CU traits. Finally and consistent again with the first antisocial behavioral problem analyses, this good fitting model could account for more than a fifth of the variability in

the antisocial behavior reacting with anger and fighting behavior (Nagelkerke $R^2 = 22.0\%$).

Exploring gender by key predictor interactions. Again on the outcome of reacts with anger and fighting none of the four gender by CU trait interactions significantly entered the final logistic regression model on getting into fights indicating again that the predictive influence of the four CU traits likely apply equivalently to boys and girls.

Predictors of Kicks, Bites, or Hurts other Children

Primary hypothesis tests. Results of the key hypothesis tests and explorations related to the third of eight outcomes—kicks, bites, or hurts other children—are displayed in Table 9. The unadjusted regression models 1 to 4 strongly support the primary hypothesis that, in this instance, CU traits significantly predict youth' kicking, biting or otherwise hurting other children. Those who never show sympathy were nearly twice (OR = 1.84) and nearly three times (OR = 2.92) as likely to kick, bite, or hurt other children, which youth who only sometimes (OR = 1.90) or never (OR = 1.91) comfort an upset child were approximately twice as likely to kick, bite, or hurt other children. Those who reported their belief that school performance is unimportant (OR = 3.61) or were often cruel, bullying or mean to others (OR = 13.24) were, In fact, there seemed to be consistent monotonic risk trends in prediction of this antisocial outcome: school's not important (incremental ORs of 1.63 and 3.61), does not show sympathy (ORs of 1.84 and 2.92), and is cruel, bullying or mean (ORs of 10.58 and 13.24). The strength of these last CU trait-antisocial behavior associations may be fairly characterized as astounding. The other CU-trait, comforts an upset child, was again a statistically significant and practically strong predictor, but a monotonic trend was not observed (ORs of 1.90 and 1.91). This pattern of findings along with all statistical and practical inferences were the same in the adjusted model 10, but the point estimates were attenuated a bit.

Table 9

Predictors of 'Kicks, Bites or Hurts Other Children (Sometimes/Often):' Logistic Regression Models (n= 4,804)

Predictors	Models 1 to 9[a]		Model 10[b]		Model 11[c]		Model 12[d]	
Categories	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.63	1.36, 1.97	1.30	1.05, 1.59	1.34	1.07, 1.67	1.27	1.02, 1.57
Not very to not at all	3.61	2.46, 5.31	1.78	1.11, 2.83	1.62	1.00, 2.67	1.54	0.94, 2.53
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.84	1.52, 2.22	1.34	1.08, 1.65	1.31	1.04, 1.65	1.28	1.03, 1.60
Never	2.92	2.17, 3.93	1.81	1.27, 2.58	1.71	1.17, 2.48	1.67	1.15, 2.43
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	1.90	1.59, 2.27	1.40	1.14, 1.71	1.19	0.95, 1.49	1.19	0.95, 1.60
Never	1.91	1.44, 2.51	1.10	0.79, 1.52	0.98	0.67, 1.34	0.94	0.62, 1.33
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	10.58	8.68, 12.9	9.24	7.52, 11.4	8.33	6.70, 10.4	8.50	6.84, 10.6
Often	13.24	8.04, 21.8	12.48	7.40, 21.0	10.14	5.72, 17.9	10.58	6.00, 18.7
Covariates								
Age (10 or 11)	1.00		1.00		1.00			
12 or 13	1.16	0.95, 1.41			1.11	0.88, 1.41		
14	0.84	0.69, 1.03			0.76	0.58, 1.00		
Gender (female)	1.00		1.00		1.00		1.00	
Male	1.93	1.62, 2.27			1.61	1.30, 1.98	1.62	1.31, 1.99
SES (highest)	1.00		1.00		1.00			
High	1.00	0.72, 1.34			0.91	0.63, 1.30		
Middle	1.07	0.80, 1.42			0.94	0.67, 1.32		
Low	1.17	0.87, 1.56			1.06	0.75, 1.49		
Lowest	1.18	0.85, 1.62			0.92	0.62, 1.35		
Parents hit me (never)	1.00		1.00		1.00		1.00	
Sometimes	2.40	1.98, 2.91			1.65	1.31, 2.07	1.63	1.29, 2.05
Often	4.58	3.22, 6.50			2.37	1.48, 2.78	2.44	1.53, 3.88
Parents angry/yell (never)	1.00		1.00		1.00		1.00	
Sometimes	1.82	1.38, 2.40			1.49	1.08, 2.03	1.43	1.04, 1.95
Often	4.41	3.20, 6.07			2.15	1.44, 3.23	2.02	1.36, 3.01

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Participants with valid data on all variables were included (86.7%).[a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. [d] Nonsignificant covariates removed. Little's MCAR χ^2 (1) = .004, p = .95. Final model fit the data well: Hosmer and Lemeshow goodness-of-fit test χ^2 (8) = 2.70, p = .95. Nagelkerke R^2 = 24.6%.

Secondary hypothesis explorations. The simple regression models 5 to 9 found support for four out of five of the secondary exploratory hypothesis about participant covarying characteristics, and the pattern of findings seems strikingly similar to that observed for the first two antisocial behavioral outcomes. All except SES significantly predicted the tendency to kick, bite or hurt others: being older (OR = 0.84, $p < .10$), male (OR = 1.93), and having been physically (OR = 4.58) or verbally (OR = 4.41) abused by a parent. These secondary predictive associations were all retained similarly in the final, fully adjusted regression model 12. Finally, model comparisons suggested that covarying personal factors might approximately account for between 15% and 30% of the CU trait-related risks.

Exploring gender by key predictor interactions. No gender by CU trait interactions significantly entered the final logistic regression model.

Predictors of Threatens Others

Results of the key hypothesis tests or explorations related to the fourth of eight outcomes, and the final outcome related to the serious antisocial behaviors of threatening, harming or being aggressive toward other persons—threatens others—are displayed in Table 10.

Primary hypothesis tests. Consistent support for the first and key hypothesis can be seen across the top of the table. Simple regression models 1 to 4 observed that all four CU traits significantly predicted threatening behaviors. Furthermore, They were all significantly predictive in both their more acute and chronic forms, and monotonic trends were noted in all: Believe that their school performance is unimportant (ORs of 1.88 and 4.19), don't show sympathy (ORs = 1.60 and 2.09), doesn't comfort an upset child (ORs of 1.97 and 2.61), and is cruel, bullying or mean (ORs of 10.87 and 20.09). Then the adjusted model 10 found that three of four of the CU-traits remained significantly predictive in their more acute form, while all four remained significant in their more chronic form. Again, consistent with the findings of the previously

Table 10

Predictors of 'I Threaten People' (Sometimes/Often)': Logistic Regression Models (n= 4,824)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[d] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.88	1.56, 2.24	1.47	1.19, 1.80	1.45	1.16, 1.79	1.46	1.19, 1.82
Not very to not at all	4.19	2.87, 6.09	2.00	1.27, 3.13	1.76	1.09, 2.83	1.83	1.13, 2.94
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.60	1.32, 1.91	1.08	0.87, 1.33	1.00	0.79, 1.24	1.00	0.80, 1.25
Never	2.09	2.09, 3.71	1.57	1.10, 2.21	1.44	0.99, 2.07	1.45	1.01, 2.08
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	1.97	1.64, 2.36	1.54	1.25, 1.89	1.24	0.99, 1.55	1.24	0.99, 1.55
Never	2.61	2.01, 3.38	1.80	1.32, 2.44	1.45	1.04, 2.01	1.46	1.05, 2.02
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	10.87	8.90,13.2	9.50	7.70, 11.70	8.32	6.60, 10.30	8.19	6.59, 10.20
Often	20.09	12.10,33.3	19.83	11.6, 34.0	16.85	9.30, 30.4	17.1	9.52, 30.80
Covariates								
Age (10 or 11)	1.00				1.00			
12 or 13	0.97	0.78, 1.18			0.87	0.68, 1.11		
14	1.12	0.92, 1.36			1.05	0.82, 1.33		
Gender (female)	1.00				1.00		1.00	
Male	2.17	1.83, 2.58			1.84	1.48, 2.26	1.82	1.47, 2.24
SES (highest)	1.00				1.00			
High	1.08	0.79, 1.46			0.94	0.66, 1.34		
Middle	1.06	0.79, 1.41			0.92	0.65, 1.28		
Low	1.26	0.93, 1.68			1.11	0.79, 1.56		
Lowest	1.37	0.99, 1.88			1.03	0.70, 1.50		
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	2.70	2.24, 2.36			1.86	1.48, 2.32	1.86	1.48, 2.32
Often	4.95	3.50, 6.99			2.90	1.83, 4.59	2.92	1.85, 4.62
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	2.17	1.62, 2.90			1.82	1.30, 2.52	1.81	1.30, 2.51
Often	5.67	4.07, 7.88			2.62	1.73, 3.96	2.61	1.73, 3.92

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Participants with valid data on all variables were included (87.1%).[a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. [d] Nonsignificant covariates removed. Little's MCAR χ^2 (1) = .004, p = .95. Final model fit the data well: Hosmer and Lemeshow goodness-of-fit test χ^2 (8) = 7.17, p = .51. Nagelkerke R^2 = 27.6%.

analyzed antisocial behavioral outcomes, the strength of the CU trait-antisocial behavior outcome associations were somewhat attenuated, but all remained strong predictors. These findings, in aggregate, again represent robust support for all four of the main sub-hypotheses.

Secondary hypothesis explorations. The unadjusted, simple regression models 5 to 9 provided largely continued support for the secondary hypothesis, finding that four of five of the covarying participant characteristics, as hypothesized, significantly predicted the antisocial behavioral problem of threatening others. Again, significant relative risks were observed among boys (OR = 2.17), living in low SES households (OR = 1.37, $p < .10$) with parents who threaten and hit (OR = 4.95) and get angry and yell at them (OR = 5.67). All of these secondary predictive associations except SES were retained in the final regression model and model comparisons suggested that these characteristics could account for between 10% and 50% of the relative risks due to having CU traits.

Exploring gender by key predictor interactions. None of the four exploratory interactions entered the final regression model. That is, they all were not statistically significant.

Predictors of Destroys own Things

The following two tables—Table 11 and Table 12—highlight the next key DSM-5 category of conduct-related antisocial behaviors associated with the destruction of property. Results begin with—destroys own things—the results of the key hypothesis tests or explorations related to this fifth of eight outcomes are displayed in Table 11 below.

Primary hypothesis tests. Support for the main hypothesis can first be seen in the top left of the table in the unadjusted, simple regression models 1 to 4. Consistent support for the main hypothesis was observed. All eight of the predictive associations were statistically and practically significant, large ORs ranging from about 2.00 to 3.50. Also, three of four of the CU trait-destroys own things relationships showed monotonic trends (not the relationship that

Table 11

Predictors of 'Destroys Own Things(Sometimes/Often):' Logistic Regression Models (n= 4,829)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[d] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.59	1.36, 1.85	1.36	1.16, 1.60	1.40	1.16, 1.63	1.37	1.15, 1.62
Not very to not at all	3.13	2.19, 4.48	2.09	1.43, 3.07	1.92	1.25, 2.85	1.89	1.25, 2.84
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.23	1.05, 1.41	0.95	0.81, 1.11	0.90	.749, 1.05	0.88	0.74, 1.04
Never	2.08	1.62, 2.67	1.20	0.91, 1.59	1.12	.813, 1.49	1.01	0.81, 1.48
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	1.64	1.42, 1.90	1.44	1.23, 1.68	1.22	1.02, 1.44	1.21	1.02, 1.44
Never	2.42	1.94, 3.01	1.97	1.54, 2.49	1.54	1.17, 1.98	1.52	1.17, 1.98
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	3.50	2.91, 4.20	3.03	2.50, 3.67	2.61	2.16, 3.24	2.65	2.16, 3.24
Often	3.53	2.15, 5.76	2.86	1.71, 4.80	2.01	1.18, 3.67	2.09	1.18, 3.67
Covariates								
Age (10 or 11)	1.00				1.00			
12 or 13	0.99	0.84, 1.16			0.93	0.77, 1.12		
14	0.96	0.82, 1.13			0.82	0.69, 0.99		
Gender (female)	1.00				1.00		1.00	
Male	1.79	1.56, 2.06			1.57	1.34, 1.85	1.58	1.34, 1.85
SES (highest)	1.00				1.00		1.00	
High	1.09	0.85, 1.41			1.10	.829, 1.48	1.11	0.83, 1.48
Middle	1.13	0.88, 1.43			1.15	.891, 1.53	1.17	0.89, 1.53
Low	1.27	0.99, 1.62			1.40	1.08, 1.87	1.42	1.07, 1.87
Lowest	1.64	1.25, 2.13			1.57	1.18, 2.15	1.60	1.18, 2.15
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	2.17	1.84, 2.55			1.54	1.27, 1.84	1.53	1.27, 1.84
Often	3.70	2.66, 5.13			1.92	1.31, 2.89	1.95	1.31, 2.89
Parents angry and yell (never)	1.00				1.00		1.00	
Sometimes	1.86	1.49, 2.32			1.76	1.35, 2.17	1.72	1.35, 2.17
Often	4.65	3.56, 6.07			3.12	2.18, 4.06	2.98	2.18, 4.06

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Participants with valid data on all variables were included (87.2%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. [d] Nonsignificant covariates removed. Missing data were completely at random: Little's MCAR χ^2 (1) = .004, p = .95. Final model fit the data well: Hosmer and Lemeshow goodness-of-fit test χ^2 (8) = 9.74, p = .28 and Negelkerke R^2 = 13.0%

involved being cruel, bullying or mean). Finally, the pattern of findings revealed in the adjusted model 10 was nearly identical to the unadjusted pattern, however, the associations were modestly attenuated.

Secondary hypothesis explorations. Unadjusted regression models 5 to 9 provided more support of the secondary hypothesis in the context of property-related offences. Four of five covarying participant characteristics (not age) significantly, and strongly to very strongly predicted the antisocial behavior of destroying ones' own things (ORs ranged from 1.64 to 4.65). Similar to the primary CU trait findings, the adjusted associations in model 10 were quite similar, but attenuated somewhat. A common trend throughout these findings has been gender as a robust predictor of antisocial outcomes. This trend continues as the final, fully adjusted model again demonstrated greater risk among boys (OR = 1.58). Also quite consistent with the developing patterns of findings, youth with parents who threaten and hit (OR = 1.95) and or get angry and yell at them (OR = 2.98) were, respectively, about twice as likely and three times as likely to destroy their own things. Also, the SES-related findings were quite interesting here. SES was retained in the final model with the relative risk of destroying one's own property being significantly and substantially greater among those youth who lived in household that were within the two lowest SES quintiles (respective ORs of 1.42 and 1.60). Finally, model comparisons suggested again that such characteristics can probably account for a large portion of the explanation for the risks that may attend being CU, perhaps as much as a third to a half of their explanation.

Exploring gender by key predictor interactions. None of the four gender by CU trait interactions significantly entered the final logistic regression model on destroys others things. Again, it would seem that the predictive influence of the four CU traits probably apply

Table 12

Predictors of 'Destroys Others Things (Sometimes/Often):' Logistic Regression Models (n= 4,874)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[d] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.37	1.07, 1.75	0.96	0.76, 1.30	0.92	0.68, 1.22	0.91	.682, 1.20
Not very to not at all	3.77	2.40, 5.90	1.70	1.02, 2.83	1.41	0.80, 2.45	1.41	.818, 2.45
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.74	1.35, 2.23	1.20	0.91, 1.57	1.15	0.86, 1.54	1.16	.868, 1.53
Never	3.51	2.45, 5.01	1.88	1.24, 2.85	1.56	0.98, 2.46	1.75	1.12, 2.73
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	2.12	1.66, 2.69	1.68	1.29, 2.18	1.48	1.11, 1.98	1.58	1.19, 2.07
Never	2.60	1.84, 3.66	1.54	1.04, 2.28	1.58	1.02, 2.36	1.65	1.10, 2.46
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	7.28	5.73, 9.26	6.24	4.84, 8.03	5.32	4.05, 6.99	5.52	4.23, 7.21
Often	19.56	11.7, 32.5	16.76	9.83, 28.5	13.17	7.32, 23.7	14.21	7.98, 25.3
Covariates								
Age (10 or 11)	1.00		1.00		1.00			
12 or 13	0.89	0.69, 1.16			0.85	0.63, 1.15		
14	0.88	0.67, 1.12			0.78	0.57, 1.07		
Gender (female)	1.00		1.00		1.00			
Male	1.74	1.40, 2.17			1.23	0.94, 1.61		
SES (highest)	1.00		1.00		1.00			
High	1.02	0.68, 1.53			0.98	0.61, 1.57		
Middle	1.05	0.75, 1.59			1.03	0.66, 1.59		
Low	0.93	0.63, 1.39			0.89	0.56, 1.40		
Lowest	1.62	1.08, 2.42			1.39	0.64, 2.22		
Parents hit me (never)	1.00		1.00		1.00		1.00	
Sometimes	3.42	2.68, 4.37			2.48	1.87, 3.28	2.72	2.09, 3.53
Often	7.17	4.82, 10.66			3.50	2.09, 5.83	4.69	2.96, 7.40
Parents angry and yell (never)	1.00		1.00		1.00			
Sometimes	1.46	1.01, 2.07			1.07	0.72, 1.59		
Often	4.65	3.13, 6.92			1.64	0.91, 2.67		

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Participants with valid data on all variables were included (87.3%).[a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. [d] Nonsignificant covariates removed. Little's MCAR χ^2 (1) = .004, p = .95. Final model fit the data well: Hosmer and Lemeshow goodness-of-fit test χ^2 (8) = 3.68, p = .81. Nagelkerke R^2 = 20.0%.

equivalently to boys and girls on this outcome.

Predictors of Destroys Others Things

Results of property destruction variables continue with—destroys others' things—the results of the key hypothesis tests or explorations related to this sixth of eight outcomes are displayed in Table 12.

Primary hypothesis tests and secondary hypothesis explorations. Significant support for the key hypothesis is again seen across the top of the table in unadjusted and adjusted models. Such was again replicated across all four of the CU traits. The CU trait-destroys others' things associations ranged from 1.54 which in most fields would be considered large (i.e., estimated increased relative risk of 54%) to an astounding 16.76, representing a near 17-fold or 1,700% elevated risk. There was again substantial support for the secondary exploratory hypothesis. All except age significantly entered unadjusted models, but only one remained in the fully adjusted model, that is, probable exposure to parental physical abuse (OR = 4.69). It is noteworthy that as with the previously discussed antisocial behavior outcome related to property destruction—destroys own things—destroying others' things continues to be significantly predicted by exposure to parental physical abuse (OR = 4.69) suggesting potentially important clinical and policy implications. Finally, adjusted versus unadjusted models allowed for the approximate explanation of the central findings by personal/familial characteristics of roughly between 20% and 40%.

Exploring gender by key predictor interactions. None of the four gender by CU trait interactions entered the final logistic regression model significantly.

Table 13

Predictors of 'I Tell Lies and Cheat (Sometimes/Often):' Logistic Regression Models (n= 4,848)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[c] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.81	1.59, 2.07	1.56	1.35, 1.78	1.44	1.24, 1.66	1.43	1.24, 1.66
Not very to not at all	2.38	1.68, 3.36	1.64	1.12, 2.38	1.56	1.04, 2.34	1.59	1.07, 2.38
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.73	1.54, 1.95	1.41	1.24, 1.60	1.34	1.17, 1.53	1.34	1.17, 1.53
Never	1.76	1.40, 2.20	1.24	0.96, 1.59	1.22	0.92, 1.59	1.22	0.93, 1.59
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	1.74	1.55, 1.95	1.42	1.25, 1.60	1.35	1.18, 1.56	1.38	1.21, 1.58
Never	1.56	1.28, 1.88	1.19	0.95, 1.46	1.09	0.86, 1.37	1.12	0.89, 1.41
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	4.58	3.77, 5.54	3.92	3.21, 4.78	3.61	2.92, 4.46	3.63	2.94, 4.48
Often	4.13	2.43, 6.98	3.76	2.17, 6.50	3.41	1.88, 6.17	3.47	1.92, 6.27
Covariates								
Age (10 or 11)	1.00		1.00		1.00		1.00	
12 or 13	1.41	1.23, 1.61			1.33	1.13, 1.55	1.32	1.13, 1.54
14	1.80	1.57, 2.06			1.50	1.28, 1.75	1.50	1.28, 1.75
Gender (female)	1.00		1.00		1.00			
Male	1.27	1.13, 1.41			1.08	0.94, 1.23		
SES (highest)	1.00		1.00		1.00			
High	1.12	0.92, 1.37			1.06	0.85, 1.33		
Middle	1.01	0.83, 1.21			0.89	0.72, 1.19		
Low	1.19	0.98, 1.44			1.14	0.92, 1.41		
Lowest	1.09	0.87, 1.34			1.00	0.77, 1.26		
Parents hit me (never)	1.00		1.00		1.00		1.00	
Sometimes	2.09	1.81, 2.42			1.37	1.16, 1.61	1.37	1.16, 1.61
Often	2.72	1.96, 3.77			1.52	1.01, 2.26	1.55	1.04, 2.30
Parents angry/yell (never)	1.00		1.00		1.00		1.00	
Sometimes	2.84	2.39, 3.37			2.38	1.97, 2.86	2.35	1.95, 2.83
Often	5.54	4.40, 6.96			3.41	2.60, 4.47	3.32	2.54, 4.36

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Participants with valid data on all variables were included (87.5%).[a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. [d] Nonsignificant covariates removed. Little's MCAR χ^2 (1) = .004, p = .95. Final model fit the data well: Hosmer and Lemeshow goodness-of-fit test χ^2 (8) = 5.72, p = .68. Nagelkerke R^2 = 16.4%.

Predictors of Tells Lies and Cheats

Deceitfulness or theft is the third category of conduct disorder related antisocial behaviors in the DSM-5 and is encapsulated by *I tell lies and cheat*, in this study, as a violation of prosocial norms. Table 1 details results related to this key DSM-5 category. Results of—I tell lies and cheat—are displayed in Table 13.

Primary hypothesis tests and secondary hypothesis explorations. Interactions, when present, necessarily take precedence in interpreting findings, and there is a significant one in this analytic plan. In their presence certain main effects can be misleading. So main effects or main predictive associations, generally consistent with a repetitive pattern, will be encapsulated. There was at least some support for all of the primary, CU trait-related hypotheses as well as for all of the covariate-related ones, except SES.

Exploring gender by key predictor interactions. A significant gender by CU trait (*shows sympathy*) interaction was found on the *tells lies and cheats* outcome. Further depiction of the interaction indicated that the shows sympathy-tells lies and cheats association was insignificant for girls but was significant for boys who only sometimes (OR = 1.63 [95% CI 1.33, 1.98]) or never (OR = 1.51 [95% CI 1.07, 2.12] show sympathy toward others. Boys with the CU trait of not showing sympathy sometimes or often were both about one and a half times as likely to tell lies and cheat as were other youth who often show sympathy.

Predictors of Disobedient in School

The final category of conduct disorder related antisocial behaviors in the DSM-5 is the serious violation of rules category emulated in this study through the variable *Disobedient in School* since it refers to the antisocial behavior of breaking established regulations in an institutional context like a school. Table 14 below details results related to this key DSM-5 category.

Table 14

Predictors of 'Disobedient in School (Sometimes/Often):' Logistic Regression Models (n= 4,776)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[d] OR	95% CI
Main Predictors						
Importance of school (very)	1.00		1.00		1.00	
Somewhat	2.76	2.39, 3.16	2.44	2.11, 2.84	2.44	2.08, 2.85
Not very to not at all	6.28	4.38, 8.99	4.51	3.08, 6.64	3.90	2.56, 5.91
Shows sympathy (often)	1.00		1.00		1.00	
Sometimes	1.62	1.42, 1.85	1.20	1.03, 1.39	1.12	0.95, 1.30
Never	2.40	1.90, 3.04	1.36	1.03, 1.78	1.27	0.94, 1.70
Comforts an upset child (often)	1.00		1.00		1.00	
Sometimes	1.72	1.51, 1.96	1.35	1.16, 1.56	1.09	0.92, 1.28
Never	1.97	1.59, 2.42	1.36	1.07, 1.72	0.97	0.75, 1.26
Cruel, bullying or mean (never)	1.00		1.00		1.00	
Sometimes	5.20	4.33, 6.24	4.45	3.67, 5.39	4.00	3.26, 4.91
Often	6.64	3.94, 11.18	5.59	3.24, 9.64	5.29	2.90, 9.63
Covariates						
Age (10 or 11)	1.00		1.00		1.00	
12 or 13	1.23	1.05. 1.43			1.21	1.00, 1.44
14	1.55	1.33, 1.80			1.39	1.16, 1.68
Gender (female)	1.00		1.00		1.00	
Male	2.09	1.84, 2.37			1.96	1.67, 2.27
SES (highest)	1.00		1.00		1.00	
High	1.07	0.85, 1.35			1.04	0.80, 1.35
Middle	1.14	0.23, 1.41			1.12	0.87, 1.42
Low	1.22	0.97, 1.52			1.30	1.01, 1.67
Lowest	1.44	1.13, 1.83			1.39	1.04, 1.83
Parents hit me (never)	1.00		1.00		1.00	
Sometimes	2.01	1.73, 2.35			1.36	1.13, 1.62
Often	3.55	2.56, 4.93			1.85	1.22, 2.78
Parents angry and yell (never)	1.00		1.00		1.00	
Sometimes	1.93	1.59, 2.34			1.66	1.33, 2.05
Often	4.26	3.34, 5.44			2.57	1.90, 3.47

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Participants with valid data on all variables were included (86.2%).[a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. [d] Nonsignificant covariates removed. Little's MCAR χ^2 (1) = .004, p = .95. Final model fit the data well: Hosmer and Lemeshow goodness-of-fit test χ^2 (8) = 12.27, p = .14. Nagelkerke R^2 = 21.4%.

Primary hypothesis tests and secondary hypothesis explorations. Within this analytic plan, two significant gender by CU trait interactions were found and they will necessarily take interpretive evidence. First though, clear support for all nine of the hypotheses, primary and secondary, can be seen in Table 14. In fact, all four of the CU trait predictors as well as all five of the covarying personal, familial and household characteristics entered and were retained in the final logistic regression model.

Exploring gender by key predictor interactions. First, a significant gender by importance of school interaction was found on the antisocial behavioral outcome, disobedience in school. Specifically, for boys it was found that those who thought school was only somewhat important (OR = 2.16 [95% CI 1.75, 2.66]) or not at all important (OR = 3.07 [95% CI 1.87, 5.04]), were respectively, about two and three times as likely to be disobedient in school. While for girls, interestingly, those who felt school was only somewhat important (OR = 2.95 [95% CI 2.32, 3.76]) or not at all important (OR = 7.74 [3.65, 16.40]) were respectively, about four and eight times as likely to be disobedient in school, The strength of the importance of school-disobedient at school association was observed to be significantly stronger among girls than boys, in fact, it seemed to be about 2-fold stronger.

A second significant interaction of gender interaction by the CU trait I am cruel, bullying, or mean to others on the antisocial outcome disobedience in school was detected. For boys it was found that those who were sometimes (OR = 3.32 [95% CI 2.56, 4.30]) or often OR = 4.94 [95% CI 2.19, 11.17]) cruel, bullying or mean to others were about five times as likely to be disobedient in school. However, girls who sometimes (OR = 5.49 [95% CI 3.93, 7.66]) or often (OR = 6.86 [95% CI 2.75, 17.03) were cruel, bully, or mean to others were about five and a half

and nearly seven times more likely to be disobedient. Again it seems that in this school context, the relative risks associated with these CU traits is significantly greater for girls than for boys.

Chapter 5: Discussion

Summary and Interpretations

This study investigated the predictive validity of CU traits on antisocial outcomes related to conduct disorder; while the data was retrospective, it has shown to be highly valuable in its contribution to the Canadian social work evidence base. In fact, no previous Canadian study has undertaken such as investigation with a nationally representative sample of Canadian youth. The remarkably balanced distribution in age and gender, where each age category of 10 to 11, 12 to 13, and 14 years was represented by approximately one-third of the sample, and gender representation was nearly equal (49.9% girls and 50.1% boys), augments this study's generalizability. Further data robustness was attained through the recoding of socioeconomic status from components such as annual household income, educational attainment, and occupational prestige of the household head and their partner. The resultant SES categories ranged from the lowest (14.3%) to the highest (12.1%), representing a full distribution of relative SES categories. Sample descriptive statistics further found that astoundingly an estimated 21.3% of participants likely had experienced physical abuse and an overwhelming 81.8% had likely been exposed to verbal abuse. Chronic instances of such abuses were reported by 2.9% and 11.5% of the participants for physical and verbal abuse, respectively.

Furthermore, this study shed light on the rarity of severe manifestations of CU traits. For instance, only 7.1% exhibited a consistent lack of sympathy, and 9.6% never comforted an upset child. Even fewer, 2.6% were deemed uncaring about their performance, and a mere 1.3% reported chronic cruelty towards others. Despite their rarity, considering the population size of Canada's 10 to 14-year-olds, their cumulative impact is substantial. However, the less virulent forms of CU traits appeared significantly more common, with 60.6% of the nationally representative sample displaying a lack of sympathy and 51.3% showing an inability to comfort

an upset child at least sometimes. Similarly, 25.6% reported not thinking school is very important, while 12.2% sometimes exhibited cruelty toward others. Analysis of the eight antisocial behavioral outcomes mirrored these findings. While their chronic manifestations were infrequent (prevalence ranging from 1.3% to 4.2%), their less virulent forms were far more common, with prevalence rates spanning 6.9% to 40.6%.

Main Effects of CU Traits on Antisocial Behavioural Outcomes

Aggression

This study highlights the profound impact CU traits have on antisocial behavior. The study's findings validate and strengthen the primary hypothesis that CU traits can predict a young person's likelihood of engaging in physical aggression. Notably, the data suggest that young people who are often cruel, bullying, or mean to others are more than eight times as likely to engage in fights. This association, significant in both statistical and practical senses, underscores the role of these traits in violent behaviors. We further see evidence of this in the data highlighting the relationship between CU traits and youth aggression, as manifested in reactions of anger and fighting. The results strongly support the hypothesis that these traits are significant predictors of aggressive behavior, even when displayed only sometimes. Specifically, the data indicates that youth who never show sympathy, deem school as unimportant, or do not comfort upset peers are over twice as likely to kick, bite, or hurt other children. The trait of cruelty, bullying, or meanness presented a particularly strong prediction, showing that youth are over thirteen times as likely to display aggressive behavior like kicking, biting, or hurting others. More, after adjusting for the influence of other traits, three of the four traits remained significant predictors of reacting with anger, with odds ratios ranging from (OR = 1.52 to 6.45).

The primary hypothesis was further supporting by findings on the physical aggression antisocial outcome of kicking, biting, or hurting others. The traits significantly predicting such behavior included lack of sympathy (OR = 1.84 to 2.92), unwillingness to comfort upset peers (OR = 1.90 to 1.91), disregard for

school performance (OR = 3.61 [95% CI 2.46, 5.31]), and exhibiting cruelty or meanness toward others with particularly strong predictive validity (OR = 13.24 [95% CI 8.04, 21.80]). Fanti et al. (2009) found that CU traits were in fact associated with aggression, a finding continually supported in the American context. Vaughn and colleagues (2023) recently found that aggression was predicted by the level of CU traits in a sample of 1,211 justice-involved males (ages 15 to 22) which this dissertation's findings seem to strongly support in the Canadian youth population, and also provide further contemporary evidence for an extension in age range of this finding in the range of 10 to 14 years. Indeed, this dissertation highlights that CU traits have been found to have large and considerably huge predictive validity for multiple aggressive antisocial behaviors. This consistent predictive power of CU traits across multiple aggressive outcomes highlights the importance of these findings for intervention and treatment program development considerations for youth presenting with CU traits.

Property Destruction

The study also provides compelling support for the crucial role of CU traits in predicting property destruction with youth never showing sympathy or comforting a distressed child being twice as likely (OR = 2.08 [95% CI 1.62, 2.67] and OR = 2.42 [95% CI 1.94, 2.01], respectively) to engage in property destruction of their own. More, traits such as chronic disregard for school importance (OR = 3.13 [95% CI 2.19, 4.48]) or regular bullying or cruelty (OR = 3.53 [95% CI 2.15, 5.76]), show an even stronger correlation, indicating three to three-and-a-half times increased likelihood of destructive behavior. Notably, even after accounting for potential overlap among these traits, the predictive significance remains robust for three out of four traits.

The results strongly affirm the key hypothesis on the conduct disorder-related antisocial behavior of property destruction, demonstrating that all four CU traits—both occasional and chronic—significantly predict property destruction in youth. The results suggest that children who occasionally (OR = 1.74 [95%

CI 1.35, 2.23]) or never show sympathy (OR = 3.51 2.45, 5.01) are approximately 75% to more than three and a half times as likely to destroy others' property. The figures were even more striking for children who never comfort an upset child (OR = 2.60 [95% CI 1.84, 3.66]) or who exhibit cruelty or bullying behavior (OR = 19.56 11.70, 32.51]), ranging from over two and a half times to nearly twenty times as likely to destroy others' property. Furthermore, youth who deem school as unimportant are nearly four times as likely (OR = 3.77 [95% CI 2.40, 5.90]) to destroy others' property. Even after adjusting for covariates, the strongest predictive associations persisted in the most severe forms of CU traits. Youth who never show sympathy are nearly twice as likely to destroy others' property (OR = 1.88 [95% CI 1.24, 2.85]), and those viewing school as unimportant or never comforting upset children are about 70% to 80% more likely to commit this antisocial property offense (OR = 1.70 [95% CI 1.02, 2.83] and OR = 1.88 [95% CI 1.24, 2.85]). The most alarming correlation was with youth who often exhibit cruelty, showing nearly seventeen times increase in odds (OR = 16.76 [95% CI 9.83, 28.50]) for destroying others' property, showcasing the significant role of severe CU traits in antisocial behavior.

Deceitfulness

In terms of deceitful behavior such as lying and cheating among youth, the findings clearly underscore the significant role of CU traits. For example, even a moderate manifestation of CU traits like limited sympathy (OR = 1.73 [95% CI 1.54, 1.95]), diminished school importance (OR = 1.81 [95% CI 1.59, 2.07]), sometimes not comforting an upset child (OR = 1.74 [95% CI 1.55, 1.95]), or sporadic cruelty and meanness toward others (OR = 4.58 [95% CI 3.77, 5.54]), were all found to increase the likelihood of lying and cheating, nearly seventy five percent to as high as four-fold, respectively. When all other CU traits were accounted for, the association between being frequently cruel, bullying, or mean and deceitful behavior remained statistically and practically significant (OR = 3.47 [95% CI 1.92, 6.27]). Further, irrespective of the severity of CU trait manifestation, all traits were significantly linked to dishonest

behavior, with odds ratios ranging from (OR = 1.34 [95% CI 1.17, 1.53] to 3.63 [95% CI 2.94, 4.48]). The association was particularly potent for chronic cruelty, bullying, and meanness, underscoring the critical role that these specific traits play in predicting antisocial deceitful actions. These findings are consistent with prior work indicating that CU traits, particularly cruelty and bullying, significantly predict dishonest behavior (Kimonis et al., 2006). Furthermore, this study advances important understanding of how both moderate and severe presentations of CU traits may predispose Canadian youth towards deceitful behaviors.

Violation of Prosocial Norms

In line with the hypothesis—findings substantiated the link between CU traits and serious violation of rules, consistent with the conduct disorder framework in DSM-5. These violations, embodied by disobedience in school settings, are more prevalent among children who infrequently display sympathy (OR = 2.40 [95% CI 1.90, 3.04]), never comfort an upset peer (OR = 1.97 [95% CI 1.59, 2.42]), or were often cruel to others (OR = 6.64 [95% CI 3.94, 11.18]). Furthermore, children considering school performance as unimportant demonstrated a 6-fold increase (OR = 6.28 [95% CI 4.38, 8.99]) while those youth often exhibit cruelty or meanness showed an over s six-and a half increased likelihood of being disobedient in school. Despite the reduction of the CU associations strength after adjusting for the independent predictability of each CU trait, all remained significant. The results underscore the robustness of the association between CU traits and the propensity to violate societal norms, thus echoing previous research which has linked CU traits with violation of rules (Frick et al., 2014).

Exploration of Key Covariates

As this research parallels the social work holistic ecological perspective, it was crucial to highlight the additional participant characteristics included in the study, all of which were treated as potential confounders or established predictors. The premise here is that these factors may significantly influence the relationships between CU traits and antisocial behaviors. As the hypotheses predicted, younger age in

general, male gender, lower SES, and experience of physical or verbal abuse were factors found to be associated with an increased risk of antisocial behaviors. For instance, older children or youth (OR = 0.54 [95% CI 0.46, 0.63]) showed a lower propensity to engage in fights, while risks were higher for boys (OR = 2.06 [95% CI 1.82, 2.34]), low SES households (OR = 1.69 [95% CI 1.32, 2.16]), and households with parents who threaten and hit (OR = 3.98 [95% CI 2.88, 5.50]) or get angry and yell (OR = 3.47 [95% CI 2.74, 4.39]). Such trends also hold for antisocial outcomes like reacting with anger, kicking, biting, or hurting other children, and threatening others. While for property-related offences, gender and parental behavior had robust predictive effects. Boys (OR = 1.58 [95% CI 1.34, 1.85]), and youth with parents who threaten and hit (OR = 1.95 [95% CI 1.31, 2.89]) or get angry and yell at them (OR = 2.98 [95% CI 2.18, 4.06]), were more likely to destroy their own things. Similarly, parental physical (OR = 7.17 [95% CI 4.82, 10.66]) or verbal (OR = 4.65 [95% CI 3.13, 6.92]) abuse increased the odds of destructive behaviors towards others' property. In terms of violation of social rules and norms school disobedience was more likely among males (OR = 1.96 [95% CI 1.67, 2.27]), from low SES households (OR = 1.39 [95% CI 1.04, 1.83]), while having parents who threaten and hit (OR = 1.85 [95% CI 1.22, 2.78]) or get angry and yell at them (OR = 2.57 [95% CI 1.90, 3.47]), further amplified the risk. Finally, lying and cheating was influenced by the age of the participant and exposure to parental abuse. Specifically, the propensity to lie or cheat increased by thirty two percent from age 10 or 11 to 12 or 13 (OR = 1.32 [95% CI 1.13, 1.54]), and by nearly fifty percent at age 14 (OR = 1.50 [95% CI 1.28, 1.75]). Exposure to parental physical (OR = 1.55 [95% CI 1.04, 2.30]) and verbal abuse (OR = 3.32 [95% CI 2.54, 4.36]) escalated these odds, by fifty percent and nearly three and a half times respectively. The secondary exploratory analysis underscores the important role of parental behaviors, as in-line with recent research by Masi et al. (2018) who found that positive parenting was associated with lower levels of conduct disorder-related antisocial behaviors. Further, as discussed, it was found that generally lower income status was increasing predictive of most antisocial

behaviors similar to Otto et al. (2021) longitudinal findings that indicated that stronger antisocial behavior was related to lower SES. This study's exploratory secondary hypothesis has provided robust knowledge for Social Workers considering program and policy development in a multitude of areas including child welfare, gender-equity, mental health, youth justice, and socioeconomic sectors.

Gender Interactions

Exploring gender by key predictor interactions. A significant gender interaction was found for the CU trait importance of school by disobedience in school outcome antisocial behavior. Specifically, for boys it was found that those who thought school was only somewhat important (OR = 2.16 [95% CI 1.75, 2.55]) or not at all important (OR = 3.07 [95% CI 1.87, 5.04]) were about two and three times as likely to be disobedient in school. While for girls, it was found that those who felt school was only somewhat important (OR = 2.95 [95% CI 2.32, 3.76]) or not at all important (OR = 7.74 [95% CI 3.65, 16.40]) they were at greater risk of this antisocial outcome. In line with these findings, Alegria et al. (2011) who found that girls who perceived education as unimportant were at a higher risk of engaging in antisocial behavior, thereby echoing our results. A second significant gender interaction was found for the CU trait I am cruel, bully, or mean to others on the antisocial outcome disobedience in school. For boys it was found that those who were sometimes (OR = 3.32 [95% CI 2.56, 4.30]) or often (OR = 4.94 [95% CI 2.19, 11.17]) cruel bully or mean to others, they were about three and five times as likely to be disobedient in school. For girls who sometimes (OR = 5.49 [95% CI 3.93, 7.66]) or often (OR = 6.86 [95% CI 2.75, 17.03]) were cruel, bully, or mean to others, they were about five and a half and nearly seven times more likely to be disobedient in school.

A final significant gender interaction was found for the CU trait I show sympathy by tells lies and cheats outcome. Further depiction of the interaction indicated that the interaction was insignificant for girls but was significant for boys who only sometimes (OR = 1.63 [95% CI 1.33, 1.98]) or never (OR = 1.51 [95% CI 1.07, 2.12]) show sympathy to others. Boys displaying the antisocial behavior of lying and

cheating sometimes or often were both about one and a half times as likely to tell lies and cheat. Future Canadian research could consider the interacting role of gender on both CU trait development as well as antisocial outcomes, as is shown here, gender interactions highlight important differences on both deceptive and social norm antisocial outcomes.

Implications for Social Work Education and Practice

Mental health social work, particularly within the Canadian context, faces unique challenges at the individual, organization and policy level. The necessity for the profession to continuously adapt to the evolving mental health landscape cannot be overemphasized. This includes accommodating policy shifts and societal perspective changes and keeping pace with advancements in psychiatric knowledge, which the discipline of social work has not typically done well in focusing on. This lack of focus on mental health social work by schools of social work is not a new, but is an ongoing concerning phenomenon. In Calderwood et al. (2010) study Living in the Shadows: A Canadian Experience of Mental Health Social Work, the authors, worked with the Ontario Association of Social Workers (OASW) to provide an Ontario-wide survey of Social Workers that served to highlight the significant importance of this dissertation's contribution to the mental health evidence-base for Canadian Social Workers. The survey specifically found that of those (n = 339) Ontario Social Workers who were surveyed 88% conducted clinical assessments, 84% provided mental health counselling, and over half of all social workers surveyed 56% provided psychotherapy. These findings suggest that the significant dearth in Clinical social work knowledge in the area of CU traits associations with antisocial behaviors in Canada probably impacts in the low end nearly half to astoundingly up to nearly 85% of Canadian social workers. Indeed, the knowledge produced from this study may positively benefit a significant proportion of social workers, like myself, who are deeply

involved in assessment, interventions, and program development in the mental health field in Canada.

This study contributes to the existing Canadian literature on CU traits and antisocial outcomes by filling a crucial gap through providing a nationally representative examination of the predictive validity of these traits in Canadian youth. More, this study provide important outcome information relevant to the diagnostic framework of Conduct Disorder in the DSM-5, particularly the sub-specifier LPE or CU traits. By examining a range of CU traits, this study provides important information on the predictive validity of these traits in relation to different types of antisocial behaviors in the Canadian context. Such insights have crucial implications for Canadian social workers, offering improved understandings of early identification, prevention, and intervention strategies targeting antisocial behaviors related to behavioral disorders. These increased understanding of the role of CU traits and other participant characteristics will inform more client-centred assessment and intervention approaches to Canadian mental health social workers working in the field.

This study further provides a unique social work ecological framework perspective, which is an important approach within the social work profession. In the context of studying CU traits and antisocial outcomes among Canadian youth, the ecological perspective offers more holistic understanding of contributing factors to antisocial behavioral outcomes. Employing this lens in examining antisocial behaviours acknowledges the impact of various environmental systems which are considered in this study through covariates such as age and gender, constituting individual characteristics in the microsystem, intertwined with exogenous factors such as parental physical and verbal abuse (a mesosystem factor) and socioeconomic status (a reflection of exosystem influences) and considers the wider sociocultural context of Canada

(macrosystem) with robust nationally representative results. The insights provided through this study advance understandings of antisocial behavioural outcomes in the Canadian youth population provide, which has powerful implications for knowledge translation, assessment, intervention, program development, and funding for Canadian Social Workers working in the field, with immediate applicability.

This study extends the existing Canadian social work literature on CU traits and antisocial outcomes through providing a germinal nationally representative examination of the predictive validity of these traits in Canadian youth. Further implications for social work practice include:

1. Providing important outcomes that can prompt early identification of youth who display CU traits. This can lead to intervention and treatment prior to these youth being pathologized through mental health diagnosis/over-diagnosis and further becoming involved in the youth justice system.
2. Social Workers in Canadian schools can identify early and intervene with children and youth experiencing comorbidities. CU traits, when combined with ADHD, for instance, lead to more severe antisocial behaviors than when either condition exists alone (Frick et al., 2014), resulting in youth truancy, displaying disruptive classroom behaviours, and potentially victimizing peers (Allen et al., 2018).
3. Social Workers can utilize the data coming from this study to support funding proposals in youth justice, schools, and hospitals for programming in Canada that can support youth expressing CU traits, such as empathy development.
4. Canadian social workers are trained to adopt a holistic ecological approach to assessment. Understanding, at an early stage, that an increased likelihood of displaying

antisocial behaviours is predicted by CU traits can lead Social Workers to further investigate the interplay of vulnerable youth environments, such as previous trauma and ACEs. Research has demonstrated that there is a relationship between previous trauma exposure and aggression when youth displayed moderate or high levels of CU traits. (Mozley et al., 2018).

DSM-5 Working Group

The present study, as it aligns closely with the criteria set out in the DSM-5 for CD, provides a robust examination of the predictive validity of CU traits on antisocial behavior outcomes within the Canadian context.

1. Contrary to the findings of Dery et al. (2019), this study provides considerable evidence in support of the inclusion and sustained application of the CU trait specifier with Limited Prosocial Emotions (LPE), in the Canadian youth population. The findings of this study provide robust support for the predictive validity of CU traits on antisocial outcomes.
2. Unique gender interactions presented in this study, especially in regard to girls in the school environment may provide a significant avenue for future research, as recent evidence from another Canadian study describes an association between girls with high CU traits and high internalizing disorder scores, specifically in the school environment, a previously unreported finding in the literature (Fontaine et al., 2023) that may be further investigated by the DSM-5 task force.
3. This study provides nationally representative evidence that supports all categories of CD behaviors in the context of the CU traits specifier—LPE. The conduct disorder criteria include a) aggression towards people and animals, b) destruction of property, c) deceitfulness or theft, and d) serious violation of rules. The eight outcome variables

employed in this study's regression models reflect these categories demonstrating a congruence with the DSM-5 operational definitions of CD that are significantly predicted by CU traits in the Canadian youth population.

Perhaps the most important outcome for both social workers and the DSM-5 task force's consideration, is the predictive ability of these traits in the Canadian population. That is, this study has advanced understandings that may lead to early screening for CU traits in schools, hospitals, youth justice organizations, and communities throughout Canada, which may prevent mental health diagnosis (CD) before it happens with effective treatment models. Indeed, as an experienced social work practitioner, operating, in part, from an interpretivist perspective in acute client care environments, it is important to look holistically at the client's life, environment, and trauma history in the context of assessment and intervention. The assessment of CU traits early, which have been shown to be related to trauma and adverse relationships (Frick & Hare, 2008), can draw social workers attention to these underlying constellation of risk factors and intervene as one caring adult prior to the medical pathologizing of these individuals.

Limitations of Current Study

While the NLSCY data provided a robust and representative sample, there were limitations to be acknowledged.

First, some variables that could provide a broader understanding of the relationship between CU traits and antisocial outcomes were not available for analysis. Including additional variables such as ethnicity, gender identification, influence of peers, and school-related factors could enhance the depth of future analysis and further provide opportunities to collect subject experience data that falls in-line with a social work interpretivist stance and ecological theoretical framework. These omissions may lead to an incomplete understanding of CU traits and antisocial behaviors within these communities and is an area of future research consideration.

Second, a limitation was that the NLSCY relied heavily on self-reported data, which could have been enriched by other sources of parent, or teacher rated data. Such triangulation of multiple data sources could enhance the accuracy of future results.

Third, this study utilized face valid proxies based on several relevant previous research studies, as described in Chapter 3, linking each construct used in this study to CU traits. This information was considered in combination with over 10 years of experience as a mental health social worker in the youth justice and mental health fields. There admittedly was some lack of fit and future studies building from this germinal nationally representative study should employ psychometrically validated measurement tools—currently no psychometric tools for assessing CU traits have been employed in Canadian nationally representative population surveys.

Finally, data was historical; however, proved very valuable in the production of important outcomes and to inform potential survey design in my own future social work career. More, historical data can provide important baseline data for future studies that investigate the Canadian sociocultural, family, peer, and individual contexts as they were 25 years ago, such comparisons to new datasets may provide insights into contributory factors into youth antisocial behaviours that have increased or decreased over time.

Despite these limitations, this study contributes valuable insights to the limited Canadian body of literature on CU traits associations with antisocial behavioral outcomes.

Future Research Directions

While this study has advanced understandings of CU traits and covariate predictive roles on antisocial behaviors, there are still areas left to explore:

1. Examining Diversity: As the population of Canadian youth is diverse, it is essential to examine differences within various subgroups such as racialized groups, including Black Canadians, Indigenous Peoples living in Canada that may identify and intervene differently in mental health disorders.

2. Factors Related to the Canadian Context: Future research should consider other factors in the Canadian context such as socialised access to health/mental healthcare, school environment including the impact of streaming in Canada, and Adverse Childhood Experiences (ACEs) and exposure to trauma.

5. Protective Factors: Future research could also focus on identifying factors that reduce the risk or mitigate the effects of CU traits on antisocial outcomes, such as parental warmth, reducing childhood trauma, assessing if vulnerable youth are attached to one caring adult. `

Summary of Future Research Needs

While this study makes significant strides towards understanding the predictive validity of CU traits in relation to antisocial behaviors among Canadian youth, several areas demand further exploration and investigation for the field to continue advancing. For instance, despite this study's broad exploration of CU traits more focused studies concentrating on specific traits or combinations of traits could be beneficial. This study examined four CU traits collectively and individually; future research might explore how different combinations of these traits could interact and influence antisocial behavior outcomes utilizing psychometrically validated tools such as the Inventory of Callous Unemotional Traits (ICU). Secondly, this study identified potential confounders and predictors of antisocial behaviors, including age, gender, SES, and exposure to parental abuse and while this information is important, future research could benefit from an even more focused understanding of these variable interactions, such as asking how different forms or severities of parental abuse interact with CU traits to predict antisocial behavior outcomes.

Furthermore, the exploration of gender as a moderator in the relationships between CU traits and antisocial behaviors is an area may require more investigation given the recent finding

related to high CU traits are correlated with internalizing disorders in school samples of girls in Canada (Fontaine, 2023). This study made preliminary inroads into understanding the role of gender, but additional research could delve deeper into potential gender differences in the expression and impact of CU traits. Finally, as a further exploratory logistic regression analyses (see Appendix D to Appendix K) of the more severe/virulent outcomes to were less powerful, and in some instances (e.g., rarest CUs on rarer outcomes) they may be inadequately powerful (i.e., very wide CIs). It is noteworthy that similar patterns in the data were noted, except that the previously observed CU-antisocial behavior predictive associations were even stronger, that is, more predictive in these. The conclusion of this exploratory analysis is that it seems that as one moves from the observation of CU traits/symptoms to the actual diagnosis of antisocial behavior problems/diagnoses, SES becomes less predictive, but parental/family factors more so indicating an important future research direction further examining abuse/trauma and associations with the development of CU traits in youth.

Conclusion

This germinal nationally representative Canadian cross-sectional study investigating CU traits and their association with antisocial behaviors among youth has yielded valuable and groundbreaking conclusions. This research has contributed to the creation of new knowledge, particularly in the Canadian context, providing generalizable information on the predictive validity of CU traits on a variety of antisocial outcomes that are specific to our country's ecological environment.

Throughout this study, the predictive power of CU traits in relation to antisocial behaviors was consistently demonstrated. Four main CU traits: thinking school is unimportant, having a lack of sympathy, failure to comfort distressed children, and engaging in cruel behaviors emerged as robust predictors of antisocial behaviors among Canadian youth. These

findings not only reinforce prior worldwide research on the subject but provide specific insights into how these traits manifest in the Canadian youth population. The strength these predictive associations emphasize the significant impact of CU traits on antisocial outcomes that may inform assessment, early intervention, and program development for Canadian social workers.

CU traits, namely cruelty toward others, displayed a particularly strong correlation with acts of aggression. This strong link suggests that social workers addressing these specific traits in interventions and treatment programs may be important for reducing aggressive behaviors among youth. Furthermore, the study's exploration of property destruction and violation of prosocial norms also highlighted the role of CU traits in predicting these antisocial behaviors providing potential targets for intervention and program development.

The nationally representative sample used in this study adds credibility to the conclusions drawn with a sample of 5,539 Canadian youth and allows for more generalizable findings, increasing the study's relevance and applicability to the Canadian population. This study extends the Canadian literature on CU traits and antisocial outcomes and provide important information to policymakers, social workers, and researchers in Canada who hope to prevent rather than diagnose mental health disorders such as CD. I have attempted to contribute to this important area of research in the Canadian context through this study and will strive forward to serve youth populations across Canada as I continue my researcher and practitioner social work career.

REFERENCES

Acock, A. C. (2018). A Gentle Introduction to Stata. *Stata press.*

Allen, J. L., Bird, E., & Chhoa, C. Y. (2018, December). Bad boys and mean girls: Callous-unemotional traits, management of disruptive behavior in school, the teacher-student relationship and academic motivation. In Frontiers in Education (Vol. 3, p. 108). Frontiers Media SA.

Babbie, E. (2015). The Practice of Social Research. *Cengage Learning.*

Blair, R. J. R. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. Consciousness and Cognition, 14(4), 698-718.

Bolton, D. (2013). Overdiagnosis Problems in the DSM-IV and the New DSM-5: Can They Be Resolved by the Distress—Impairment Criterion?. *The Canadian Journal of Psychiatry*, *58*(11), 612-617.

American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed. Text Revision.). *Washington, DC: Author.*

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). *Washington, DC: Author.*

American Psychiatric Association. (1987). Diagnostic and statistical manual of mental disorders (3rd ed. revised). *Washington, DC: Author.*

American Psychiatric Association. (1980). Diagnostic and statistical manual of mental disorders (3rd ed.). *Washington, DC: Author.*

Andershed, H., Hodgins, S., & Tengstrom, A. (2007). Convergent validity of the Youth Psychopathic Traits Inventory (YPI): Association with the Psychopathy Checklist: Youth Version (PCL:YV). *Assessment, 14*, 144–154. doi:10.1177/1073191106298286

Babyak, M. A. (2004). What you see may not be what you get: a brief, nontechnical introduction to overfitting in regression-type models. *Psychosomatic Medicine, 66*(3), 411-421. doi:10.1097/00006842-200405000-00021

Basque, C., Toupin, J., & Cote, G. (2012). Predicting recidivism in adolescents with behavior problems using PCL-SV. *International Journal of Offender Therapy and Comparative Criminology, Advance online publication*. doi:10.1177/0306624X12455321

Bewick, V., Cheek, L., & Ball, J. (2005). Statistics review 14: Logistic regression. *Critical Care, 9*(1), 112-118. doi:10.1186/cc3045

Bird, H. R., Canino, G. J., Davies, M., Zhang, H., Ramirez, R., & Lahey, B. B. (2001). Prevalence and correlates of antisocial behaviors among three ethnic groups. *Journal of Abnormal Child Psychology, 29*(6), 465-478. doi:10.1023/A:1012279707372

Bijttebier, P., & Decoene, S. (2009). Assessment of psychopathic traits in children and adolescents: Further validation of the Antisocial Process Screening Device and the Childhood Psychopathy Scale. *European Journal of Psychological Assessment, 25*(3), 157-163. doi:10.1027/1015-5759.25.3.157

Blair J. R. J., (2018). Traits of empathy and anger: implications for psychopathy and other disorders associated with aggression. *Philosophical Transactions of the Royal Society B: Biological Sciences, 373*(1744), 20170155. doi:10.1098/rstb.2017.0155

Blair, R. J. R. (2005). Responding to the emotions of others: Dissociating forms of empathy through the study of typical and psychiatric populations. *Consciousness and Cognition, 14*(4), 698-718. doi:10.1016/j.concog.2005.06.004

Blair, R. J. R., Colledge, E., Murray, L., & Mitchell, D. G. V. (2004). A selective impairment in the processing of sad and fearful expressions in children with psychopathic tendencies. *Journal of Abnormal Child Psychology, 32*(2), 145-157. doi:10.1023/a:1012225108281

Blair, J. R. J., & Coles, M. (2000). Expression recognition and behavioral problems in early adolescence. *Cognitive Development, 15,* 421–434. doi:10.1016/S0885-2014(01)00039-9

Bleiss, J. L.; Cohen, J.; Everitt, B.S. (1971). Large sample standard errors of kappa and weighted kappa. *Psychological Bulletin, 72*, 323–327. doi:10.1037/h0028106

Boyle, G. J. (2002). Racial differences in psychopathic personality. *International Journal of Adolescence and Youth, 10*(3-4), 159-173. doi:10.1017/S0954579415000267

Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. *Harvard University Press.*

Burt, S. A., & Klump, K. L. (2019). The Michigan State University Twin Registry (MSUTR): An update. *Twin Research and Human Genetics, 22*(6), 809–817. doi:10.1017/thg.2019.108

Byrd, A. L., Loeber, R., & Pardini, D. A. (2012). Understanding desisting and persisting forms of delinquency: The unique contributions of disruptive behavior disorders and interpersonal callousness. *Journal of Child Psychology and Psychiatry, 53,* 371–380. doi:10.1111/j.1469-7610.2011.02504.x

Byrne, B. M. (1998). Structural Equation Modeling with LISREL, PRELIS and SIMPLIS: Basic Concepts, Applications and Programming. *Mahwah, New Jersey: Lawrence Erlbaum Associates.*

Canadian Mental Health Association. (2023). Mental Illness in Children and Youth. Retrieved from https://cmha.bc.ca/documents/mental-illnesses-in-children-and-youth-2/.

Campbell, M. A., Porter, S., & Santor, D. (2004). Psychopathic traits in adolescent offenders: An evaluation of criminal history, clinical, and psychosocial correlates. *Behavioral sciences & the law*, *22*(1), 23-47. doi:10.1002/bsl.572

Catchpole, R. E. H., & Gretton, H. M. (2003). The predictive validity of risk assessment with violent young offenders: A 1-year examination of criminal outcome. *Criminal Justice and Behavior, 30*, 688–708. doi:10.1177/0093854803256455

Chabrol, H., Valls, M., van Leeuwen, N., & Bui, E. (2012). Callous-unemotional and borderline traits in nonclinical adolescents: Personality profiles and relations to antisocial behaviors. *Personality and Individual Differences*, *53*(8), 969-973. doi:10.1016/j.paid.2012.07.017

Chabrol, H., Van Leeuwen, N., Rodgers, R., & Séjourné, N. (2009). Contributions of psychopathic, narcissistic, Machiavellian, and sadistic personality traits to juvenile delinquency. *Personality and individual differences*, *47*(7), 734-739. doi:10.1016/j.paid.2009.06.020

Chabrol, H., van Leeuwen, N., Rodgers, R. F., & Gibbs, J. C. (2011). Relations between self-serving cognitive distortions, psychopathic traits, and antisocial behavior in a non-clinical

sample of adolescents. *Personality and Individual Differences, 51,* 887–892. doi:10.1016/j.paid.2011.07.008.

Chauhan, P., Ragbeer, S. N., Burnetter, M. L., Oudekerk, B., Reppucci, N. D., & Moretti, M. M. (2012). Comparing the Youth Psychopathic Traits Inventory (YPI) and the Psychopathy Checklist–Youth Version (PCL-YV) among offending girls. *Assessment, Advance online publication*. doi:10.1177/1073191112460271.

Cikara, M., & Fiske, S. T. (2013). Their pain, our pleasure: stereotype content and schadenfreude. *Annals of the New York Academy of Sciences, 1299*(1), 52-59. doi:10.1111/nyas.12179

Cleckley, H. (1988). The mask of sanity (5th ed.). St. Louis, MO: Mosby.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Colins, O. F., Noom, M., & Vanderplasschen, W. (2017). Youth Psychopathic Traits Inventory-Short Version: A further test of the internal consistency and criterion validity. *Journal of Psychopathology and Behavioral Assessment, 34,* 476-486. doi:10.1007/s10862-012-9299-0

Cohen, J., & Cohen, P. (1983). Applied multiple regression/correlation analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychosocial Measurement, 20,* 37-46. doi:10.1177/001316446002000104

Colins, O. F., Noom, M., & Vanderplasschen, W. (2012). Youth Psychopathic Traits Inventory–Short Version: A further test of the internal consistency and criterion validity. *Journal of Psychopathology and Behavioral Assessment, 34*, 476–486. doi:10.1007/s10862-012-9299-0

Comings, D. E., Radhika Gade-Andavolu, Nancy Gonzalez, Shijuan Wu, Donn Muhleman, Hezekiah Blake, F. Chiu et al. (2000). Multivariate analysis of associations of 42 genes in ADHD, ODD and conduct disorder. *Clinical Genetics, 58*(1), 31-40. doi:10.1034/j.1399-0004.2000.580106.x

Côté, S. M., Boivin, M., Nagin, D. S., Japel, C., Xu, Q., Zoccolillo, M., ... & Tremblay, R. E. (2002). The role of maternal education and nonmaternal care services in the prevention of children's physical aggression problems. *Archives of General Psychiatry, 64*(11), 1305-1312. doi:10.1001/archpsyc.64.11.1305

Côté, S., Tremblay, R. E., Nagin, D. S., Zoccolillo, M., & Vitaro, F. (2002). Childhood behavioral profiles leading to adolescent conduct disorder: Risk trajectories for boys and girls. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(9), 1086-1094. doi:10.1097/00004583-200209000-00009

Côté, S., Zoccolillo, M., Tremblay, R. E., Nagin, D., & Vitaro, F. (2002). Predicting girls' conduct disorder in adolescence from childhood trajectories of disruptive behaviors. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(6), 678-684. doi:10.1097/00004583-200106000-00013

Costello E. J., Mustillo S, Erkanli A, Keeler G, Angold A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry, 60*(8), 837–844. doi:10.1001/archpsyc.60.8.837

Costello, E. J., Angold, A., Burns, B. J., Stangl, D. K., Tweed, D. L., Erkanli, A., & Worthman, C. M. (1996). The Great Smoky Mountains Study of Youth: goals, design, methods, and the prevalence of DSM-III-R disorders. *Archives of General Psychiatry, 53*(12), 1129-1136. doi:10.1001/archpsyc.1996.01830120067012

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334. doi:10.1007/BF02310555

Crum K.I., Waschbusch D.A., Willoughby M.T. (2016). CU Traits, Behavior Disorders, and the Student–Teacher Relationship in Elementary School Students. *Journal of Emotional Behavior Disorders, 24*, 16–29. doi:10.1177/1063426615569533.

Curtis A., Harries T., Moulds L., Miller P. (2019). Addressing child-to-parent violence: Developmental and intervention considerations. *Journal of Family Studies, 1-18*. doi:10.1080/13229400.2019.1682643.

Dadds, M. R., & Frick, P. J. (2019). CU traits in children and mechanisms of impaired empathy. In R. J. R. Blair (Ed.), The neurobiology of CU traits and aggression (pp. 39-57). Springer.

Dadds, M. R., Perry, Y., Hawes, D. J., Merz, S., Riddell, A. C., Haines, D. J., ... & Abeygunawardane, A. I. (2009). Attention to the eyes and fear-recognition deficits in child psychopathy. *British Journal of Psychiatry, 195*(3), 219-225. doi:10.1037/0022-006X.73.3.400

Dadds, M. R., Fraser, J., Frost, A., & Hawes, D. J. (2005). Disentangling the underlying dimensions of psychopathy and conduct problems in childhood: A community study. *Journal of Consulting and Clinical Psychology, 73*, 400–410. doi:10.1037/0022-006X.73.3.400.

Desrosières, A. (2002). The Politics of Large Numbers: A History of Statistical Reasoning. *Harvard University Press.*

Decuyper, M., De Caluwé, E., De Clercq, B., & De Fruyt, F. (2014). Callous-unemotional traits in youth from a DSM-5 trait perspective. *Journal of Personality Disorders, 28*(3), 334-357. doi:10.1521/pedi_2013_27_120

Dolan, M. C., & Rennie, C. E. (2007). Is juvenile psychopathy associated with low anxiety and fear in conduct-disordered male offenders?. *Journal of anxiety disorders, 21*(8), 1028-1038. doi:10.1016/j.janxdis.2006.11.008

Durkheim, É. (1897). *Le Suicide. Étude de sociologie*. Félix Alcan.

Edens, J. F., & Cahill, M. A. (2007). Psychopathy in adolescence and criminal recidivism in young adulthood: Longitudinal results from a multiethnic sample of youthful offenders. *Assessment, 14*, 57–64. doi: 10.1177/1073191106290711

Elliott, D. S., Huizinga, D., & Morse, B. (1986). Self-Reported Violent Offending: A Descriptive Analysis of Juvenile Violent Offenders and Their Offending Careers. *Journal of Interpersonal Violence, 1*(4), 472-514. doi:10.1177/088626086001004006

Enders, C. K. (2017). *Applied missing data analysis*. Guilford Publications.

Eisenberg, N., & Eggum, N. D. (2009). Empathic responding: Sympathy and personal distress. In J. Decety & W. Ickes (Eds.), *The social neuroscience of empathy* (pp. 71-83). Cambridge, MA: MIT Press.

Escobar de Jagajodhy, K. M. (2023). Exploring paradoxical advantages of Latin Americans in Canada: Secondary analytic expositions of contextualized resiliencies and vulnerabilities. *Doctoral dissertation* (finalize reference upon publication in ProQuest Dissertations & Theses Global).

Essau, C. A., Sasagawa, S., & Frick, P. J. (2006). CU traits in a community sample of adolescents. *Assessment, 13*, 454–469. doi:10.1177/1073191106287354.

Facci, C., Imbimbo, E., Stefanelli, F., Ciucci, E., Guazzini, A., Baroncelli, A., & Frick, P. J. (2023). The social correlates to CU traits in a sample of high school students. *Behavior Therapy, 54*(3), 595-604. doi:10.1016/j.beth.2023.01.001

Fanti, K. A., Kyranides, M. N., Panayiotou, G., Avraamides, M. N., & Georgiou, G. (2017). Interactive effects of CU traits and impulsivity on young adults' academic performance. *Journal of Psychopathology and Behavioral Assessment, 39*(4), 631-640. doi:10.1007/s10964-013-9958-9

Fanti, K. A., Demetriou, C. A., & Kimonis, E. R. (2013). Variants of callous-unemotional conduct problems in a community sample of adolescents. *Journal of Youth and Adolescence, 42*(7), 964-979. doi:10.1007/s10964-013-9958-9

Fanti, K. A., & Kimonis, E. R. (2012). Bullying and victimization: The role of conduct problems and psychopathic traits. *Journal of Research on Adolescence, 22*, 617–631. doi:10.1111/j.1532-7795.2012.00809.x

Fanti, K. A., Frick, P. J., & Georgiou, S. (2009). Linking callous-unemotional traits to instrumental and non-instrumental forms of aggression. Journal of Psychopathology and Behavioral Assessment, 31(4), 285-298.

Fergusson, D. M., & Horwood, L. J. (1998). Exposure to interparental violence in childhood and psychosocial adjustment in young adulthood. *Child Abuse & Neglect, 22*(5), 339-357. doi:10.1016/S0145-2134(98)00004-0

Fite, P. J., Raine, A., Stouthamer-Loeber, M., Loeber, R., & Pardini, D. A. (2010). Reactive and proactive aggression in adolescent males: Examining differential outcomes 10 years later in early adulthood. *Criminal Justice and Behavior, 37*(2), 141-157. doi:10.1177/0093854809353051

Fontaine, N. M., Rozéfort, A., & Bégin, V. (2023). Associations between callous-unemotional traits and psychopathology in a sample of adolescent females. Journal of the Canadian Academy of Child and Adolescent Psychiatry, 32(1), 14.

Fontaine, N. M. G., McCrory, E. J. P., Boivin, M., Moffitt, T. E., & Viding, E. (2011). Predictors and outcomes of joint trajectories of CU traits and conduct problems in childhood. *Journal of Abnormal Psychology*, *120*(3), 730-742. doi:10.1037/a0022620

French National Medical Research Institute. (2005). Conduct disorder in children and adolescents. Retrieved from: http://www.ncbi.nlm.nih.gov/books/NBK7133/. Author.

Frick, P. J., & Kemp, R. (2021). CU traits and antisocial behavior. In B. L. Cutler & P. A. Zapf (Eds.), *Encyclopedia of Child and Adolescent Development*. Wiley.

Frick, P. J., & Ray, J. V. (2015). Evaluating CU traits as a personality construct. *Journal of Personality, 83*(6), 710-722. doi:10.1111/jopy.12114

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Annual Research Review: A developmental psychopathology approach to understanding CU traits in children and adolescents with serious conduct problems. *Annual Review of Clinical Psychology, 10*, 291-319. doi:10.1111/jcpp.12152

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Can CU traits enhance the understanding, diagnosis, and treatment of serious conduct problems in children and adolescents? A comprehensive review. *Psychological Bulletin, 140*(1), 1-57. doi:10.1037/a0033076

Frick, P. J., & Viding, E. M. (2009). Antisocial behavior from a developmental psychopathology perspective. *Development and Psychopathology, 21*, 1111–1131. doi:10.1017/S0954579409990071

Frick, P. J., & Dantagnan, A. L. (2005). Predicting the stability of conduct problems in children with and without callous-unemotional traits. *Journal of Child and Family Studies, 14*, 469-485. doi:10.1007/s10826-005-7183-1

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. A. (2003). CU traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*(4), 457-470. doi:10.1023/A:1023899703866

Frick, P. J., & White, S. F. (2015). The importance of CU traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry, 49*(4), 359-375. doi:10.1111/jcpp.12328

Frick, P. J., & White, S. F. (2008). The importance of CU traits for the development of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry, 49*, 359–375. doi:10.1111/j.1469-7610.2007.01862x

Fritz, M. (2008). *Psychosocial adjustment problems: Individual and acculturation differences* (Doctoral dissertation, Psykologiska institutionen).

Fung, A. L., Raine, A., & Gao, Y. (2009). Cross-cultural generalizability of the Reactive-Proactive Aggression Questionnaire (RPQ). *Journal of Clinical Child & Adolescent Psychology*, *38*(2), 247-263. doi:10.1080/15374410902851364

Gelman, A., & Hill, J. (2007). Data analysis using regression and multilevel/hierarchical models. Cambridge university press.

Germain, C. B. (2010). Social work practice. Columbia University Press.

Government of the United Kingdom. (2016). The Mental Health of Children and Young People in England. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/575632/Mental_health_of_children_in_England.pdf.

Gretton, H. M., Hare, R. D., & Catchpole, R. E. (2004). Psychopathy and offending from adolescence to adulthood: a 10-year follow-up. *Journal of consulting and clinical psychology*, *72*(4), 636. doi:10.1037/0022-006X.72.4.636

Harrell, F. E. (2015). Regression modeling strategies: with applications to linear models, logistic and ordinal regression, and survival analysis. Springer.

Hawes, D. J., Price, M. J., & Dadds, M. R. (2014). CU traits and the treatment of conduct problems in childhood and adolescence: A comprehensive review. *Clinical Child and Family Psychology Review*, *17*(3), 248-267. doi:10.1007/s10567-013-0169-8

Hawkins, J. D. Smith B. H., Hill K. G. et al. Understanding and preventing crime and violence: findings from the Seattle Social Development Project. In: Thornberry TP, Krohn MD. editors. Taking stock of delinquency: an overview of findings from contemporary longitudinal studies. New York (NY): Kluwer Academic/Plenum Publishers; 2003. p 255-312.

Hawkins, J. D., & Weis, J. G. (1985). The social development model: An integrated approach to delinquency prevention. *Journal of Primary Prevention*, *6*(2), 73-97. doi:10.1007/BF01325432

Hawton, K., Saunders, K., & O'Connor, R. C. (2012). Self-harm and suicide in adolescents. *The Lancet*, *379*(9834), 2373-2382. doi:10.1016/S0140-6736(12)60322-5

Hawes, D. J., Price, M. J., & Dadds, M. R. (2014). CU traits and the treatment of conduct problems in childhood and adolescence: A comprehensive review. *Clinical Child and Family Psychology Review*, *17*(3), 248-267. doi:10.1007/s10567-013-0169-8

Hawes, D. J., & Dadds, M. R. (2005). The treatment of conduct problems in children with CU traits. *Journal of Consulting and Clinical Psychology*, *73*(4), 737. doi:10.1037/0022-006X.73.4.737

Herpers, P. C., Klip, H., Rommelse, N. N., Greven, C. U., & Buitelaar, J. K. (2015). Associations between high callous–unemotional traits and quality of life across youth with non-conduct disorder diagnoses. *European Child & Adolescent Psychiatry, 24*(7), 817-827. doi:10.1007/s00787-014-0611-1

Horan, J. M., Brown, J. L., Jones, S. M., & Aber, J. L. (2015). Assessing invariance across sex and race/ethnicity in measures of youth psychopathic characteristics. *Psychological Assessment, 27*(2), 657-663. doi:10.1037/pas0000045

Holmes, S. E., Slaughter, J. R., & Kashani, J. (2001). Risk factors in childhood that lead to the development of conduct disorder and antisocial personality disorder. *Child Psychiatry and Human Development, 31*(3), 183-193. doi:10.1023/A:1026425304480

Howard, A. L., Kimonis, E. R., Muñoz, L. C., & Frick, P. J. (2012). Violence exposure mediates the relation between callous-unemotional traits and offending patterns in adolescents. *Journal of abnormal child psychology, 40*, 1237-1247. doi:10.1007/s10802-012-9647-2

Johnston, L. (2014). Secondary data analysis: A method of which the time has come. *Qualitative and Quantitative Methods in Libraries*, 3(3), 619-626. doi:10.5957/jre.27.2.120

Kahn, R. E., Frick, P. J., Youngstrom, E., Findling, R. L., & Youngstrom, J. K. (2012). The effects of including a callous–unemotional specifier for the diagnosis of conduct disorder. Journal of child psychology and psychiatry, 53(3), 271-282.

Kamens, S. R. (2011). On the proposed sexual and gender identity diagnoses for DSM-5: History and controversies. The Humanistic Psychologist, 39(1), 37-59.

Kazdin, A. E. (1995). *Conduct disorders in childhood and adolescence* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Keenan, K., & Shaw, D. S. (2003). Starting at the beginning: Exploring the etiology of antisocial behavior in the first years of life. In B. B. Lahey, T. E. Moffitt, & A. Caspi (Eds.), *Causes of Conduct Disorder and Juvenile Delinquency* (pp. 153-181). Guilford Press.

Kessler, R. C., & Bromet, E. J. (2013). The epidemiology of depression across cultures. Annual review of public health, 34, 119-138.

Kimonis, E. R., Fanti, K. A., Frick, P. J., Moffitt, T. E., Essau, C., Bijttebier, P., Marsee, M. A., Kolko, D., Salekin, R. T., Colins, O. F., & Andershed, H. (2015). Is CU trait stability moderated by functional impairment? *Developmental Psychology*, 57(1), 22-32. doi:10.1037/dev0001148

Kimonis, E. R., Frick, P. J., Skeem, J. L., Marsee, M. A., Cruise, K., Munoz, L. C., & Morris, A. S. (2008). Assessing callous–unemotional traits in adolescent offenders: Validation of the Inventory of Callous–Unemotional Traits. *International journal of law and psychiatry*, *31*(3), 241-252. doi:10.1016/j.ijlp.2008.04.002

Kimonis, E. R., Frick, P. J., Boris, N. W., Smyke, A. T., Cornell, A. H., Farrell, J. M., & Zeanah, C. H. (2006). CU features, behavioral inhibition and parenting: Independent predictors of aggression in a high-risk preschool sample. *Journal of Child and Family Studies*, 15, 745–756. doi:10.1007/s10826-006-9057-9

Kimonis, E. R., Frick, P. J., Fazekas, H., & Loney, B. R. (2006). Psychopathy, aggression, and the emotional processing of emotional stimuli in non-referred girls and boys. *Behavioral Sciences and the Law*, 24, 21–37. doi:10.1002/bsl.662

Kriegler, S., & Bester, S. E. (2014). A critical engagement with the DSM-5 and psychiatric diagnosis. Journal of Psychology in Africa, 24(4), 393-401.

Lahey, B. B. (2014). What we need to know about callous-unemotional traits: comment on Frick, Ray, Thornton, and Kahn (2014).

Lahey, B. B., Loeber, R., Burke, J. D., & Applegate, B. (2005). Predicting future antisocial personality disorder in males from a clinical assessment in childhood. *Journal of Consulting and Clinical Psychology*, 73(3), 389-399. doi:10.1037/0022-006X.73.3.389

Lahey, B. B., Loeber, R., Hart, E. L., Frick, P. J., Applegate, B., Zhang, Q., & Russo, M. F. (1995). Four-year longitudinal study of conduct disorder in boys: Patterns and predictors of persistence. *Journal of Abnormal Psychology*, 104(1), 83-93. doi:10.1037/0021-843X.104.1.83

Lansford, J. E., Criss, M. M., Pettit, G. S., Dodge, K. A., & Bates, J. E. (2003). Friendship quality, peer group affiliation, and peer antisocial behavior as moderators of the link between negative parenting and adolescent externalizing behavior. Journal of Research on Adolescence, 13(2), 161-184.

Little, R. J. (2017). *Statistical analysis with missing data*. Wiley.

Loeber, R., Burke, J., & Pardini, D. A. (2009). Perspectives on oppositional defiant disorder, conduct disorder, and psychopathic features. *Journal of Child Psychology and Psychiatry*, 50, 133–142. doi:10.1111/j.1469-7610.2008.02011.x

Loeber, R., Burke, J. D., Lahey, B. B., Winters, A., & Zera, M. (2000). Oppositional defiant and conduct disorder: A review of the past 10 years, part I. *Journal of the American Academy*

of Child and Adolescent Psychiatry, 39(12), 1468–1484. doi:10.1097/00004583-200012000-00007

Loeber, R., Farrington, D. P. (2008). Advancing knowledge about causes in longitudinal studies: Experimental and quasi-experimental methods. In: Liberman AM, editor. *The long view of crime: a synthesis of longitudinal research*. New York, NY: Springer.

Loeber, R., & Farrington, D. P. (Eds.). (2001). *Child Delinquents: Development, Intervention, and Service Needs*. Thousand Oaks, CA: Sage Publications, Inc.

Loeber, R., Green, S. M., Keenan, K., & Lahey, B. B. (1993). Which boys will fare worse? Early predictors of the onset of conduct disorder in a six-year longitudinal study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34(4), 499-509. doi:10.1097/00004583-199504000-00017

Loney, B. R., Frick, P. J., Clements, C. B., Ellis, M. L., & Kerlin, K. (2003). CU traits, impulsivity, and emotional processing in adolescents with antisocial behavior problems. *Journal of Clinical Child and Adolescent Psychology*, 32, 66-80. doi:10.1207/S15374424JCCP3201_06

Lynam, D.R., Charnigo, R., Moffitt, T.E., Loeber, R., & Stouthamer-Loeber, M. (2009). The stability psychopathy across adolescence. Development and Psychopathology, 21, 1133–1153. doi:10.1017/S0954579409990083

Mahmood, S. S., Levy, D., Vasan, R. S., & Wang, T. J. (2014). The Framingham Heart Study and the epidemiology of cardiovascular disease: a historical perspective. *The Lancet*, 383(9921), 999-1008. doi:10.1016/S0140-6736(13)61752-3

Marsee, M.A., & Frick, P.J. (2007). Exploring the cognitive and emotional correlates of proactive and reactive aggression in a sample of detained girls. Journal of Abnormal Child Psychology, 35, 969–981. doi:10.1007/s10802-007-9147-y

Masi, G., Pisano, S., Brovedani, P., Maccaferri, G., Manfredi, A., Milone, A., ... & Muratori, P. (2018). Trajectories of callous–unemotional traits from childhood to adolescence in referred youth with a disruptive behavior disorder who received intensive multimodal therapy in childhood. *Neuropsychiatric Disease and Treatment*, 2287-2296. doi:10.2147/NDT.S166953

Moffitt, T. E., Houts, R., Asherson, P., Belsky, D. W., Corcoran, D. L., Hammerle, M., Harrington, H., Hogan, S., Meier, M. H., Polanczyk, G. V., Poulton, R., Ramrakha, S., Sugden, K., Williams, B., & Rohde, L. A. (2018). Is adult ADHD a childhood-onset neurodevelopmental disorder? Evidence from a four-decade longitudinal cohort study. *American Journal of Psychiatry*, 175(12), 1197-1206. doi:10.1176/appi.ajp.2018.17111183

Moffitt T. E., Caspi A, Harrington H, Milne B. J. (2002) Males on the life-course-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology*, 14(1), 179–207. doi:10.1017/S0954579402001104

Moffitt, T. E. (2018). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy revisited. *Annual Review of Clinical Psychology*, 14, 187-209. doi:10.1146/annurev-clinpsy-032816-044918

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: a developmental taxonomy. *Psychological Review*, 100(4), 674-701. doi:10.1037/0033-295X.100.4.674

Morris, T. (2006). Social work research methods: Four alternative paradigms. Sage.

Mozley, M. M., Modrowski, C. A., & Kerig, P. K. (2018). The roles of trauma exposure, rejection sensitivity, and callous-unemotional traits in the aggressive behavior of justice-involved youth: A moderated mediation model. Aggressive behavior, 44(3), 268-275.

Muñoz, L. C., & Frick, P. J. (2007). The reliability, stability, and predictive utility of the self-report version of the Antisocial Process Screening Device. *Scandinavian Journal of Psychology*, 48(4), 299-312. doi:10.1111/j.1467-9450.2007.00602.x

Nock, M. K., Green, J. G., Hwang, I., McLaughlin, K. A., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2013). Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: results from the National Comorbidity Survey Replication Adolescent Supplement. *Archives of General Psychiatry*, 69(12), 1305-1313. doi:10.1001/jamapsychiatry.2013.187

Nock, M. K., Kazdin, A. E., Hiripi, E., & Kessler, R. C. (2006). Prevalence, subtypes, and correlates of DSM-IV conduct disorder in the National Comorbidity Survey Replication. *Psychological Medicine*, 36(5), 699-710. doi:10.1017/S0033291706007082

Offord, D. R., Boyle, M. H., Szatmari, P., Rae-Grant, N. I., Links, P. S., Cadman, D. T., ... & Thomas, H. (1989). Ontario Child Health Study: II. Six-month prevalence of disorder and rates of service utilization. *Archives of General Psychiatry*, 44(9), 832-836. doi:10.1001/archpsyc.1987.01800210084011

Office of National Statistics. (2006). Mental health of children and young people in Great Britain, 2004. Retrieved from: http://www.esds.ac.uk/doc/5269/mrdoc/pdf/5269technicalreport.pdf

Otto, C., Kaman, A., Erhart, M., Barkmann, C., Klasen, F., Schlack, R., & Ravens-Sieberer, U. (2021). Risk and resource factors of antisocial behavior in children and adolescents: results of the longitudinal BELLA study. *Child and Adolescent Psychiatry and Mental Health*, 15, 1-14. doi:10.1186/s13034-021-00393-9

Ortiz, J., & Raine, A. (2004). Heart rate level and antisocial behavior in children and adolescents: A meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, *43*(2), 154-162. doi:10.1097/00004583-200402000-00010

Pardini, D. A., Stepp, S., Hipwell, A., Stouthamer-Loeber, M., & Loeber, R. (2019). The clinical utility of the proposed DSM-5 CU subtype of conduct disorder in young girls. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(1), 62–73. doi:10.1016/j.jaac.2012.10.006

Pardini, D. A., Lochman, J. E., & Powell, N. (2007). The development of CU traits and antisocial behavior in children: Are there shared and/or unique predictors?. *Journal of Clinical Child & Adolescent Psychology*, 36(3), 319-333. doi:10.1080/15374410701444363

Park, Y. S., Konge, L., & Artino, A. R. (2020). The positivism paradigm of research. Academic medicine, 95(5), 690-694.

Pasalich, D. S., Dadds, M. R., Hawes, D. J., & Brennan, J. (2011). Do CU traits moderate the relative importance of parental coercion versus warmth in child conduct problems? An observational study. *Journal of Child Psychology and Psychiatry*, 52, 1308–1315. doi:10.1111/j.1469-7610.2011.02435.x

Pettit, B., & Western, B. (2004). Mass imprisonment and the life course: Race and class inequality in US incarceration. *American Sociological Review*, 69(2), 151-169. doi:10.1177/000312240406900201

Rizeq J., Toplak M. E., Ledochowski J., Basile A., Andrade B. F. (2020). CU Traits and Executive Functions are Unique Correlates of Disruptive Behavior in Children. *Developmental Neuropsychology*, 45, 154–166. doi:10.1080/87565641.2020.1737698

Ronningstam, E. (2011). Narcissistic personality disorder: A clinical perspective. *Journal of Psychiatric Practice*, 17(2), 89-99. doi:10.1097/01.pra.0000396060.67150.40

Roose, A., Bijttebier, P., Decoene, S., Claes, L., & Frick, P.J. (2010). Assessing the affective features of psychopathy in adolescence: A further validation of the Inventory of CU traits. Assessment, 17, 44–57. doi:10.1177/1073191109344153

Rutter, M., Giller, H., & Hagell, A. (1998). *Antisocial Behavior by Young People*. New York: Cambridge University Press.

Salekin, R. T. (2018). CU traits and treatment outcomes in youth: A meta-analytic review. *Clinical Psychology: Science and Practice*, 25(1), e12230. doi:10.1111/cpsp.12230

Salekin, R. T. (2006). Treatment of psychopathy: A review and brief introduction to the mental model approach for psychopathy. *Behavioral Sciences & the Law*, 28, 235. doi:10.1002/bsl.925

Schafer, J. L., & Graham, J. W. (2007). Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), 147-177. doi:10.1037/1082-989X.7.2.147

Schmidt, F., McKinnon, L., Chattha, H. K., & Brownlee, K. (2006). Concurrent and predictive validity of the psychopathy checklist: youth version across gender and ethnicity. *Psychological assessment*, *18*(4), 393. doi:10.1037/1040-3590.18.4.393

Smith, K. P. (2008). An Introduction to Secondary Data Analysis. In *The SAGE Handbook of Social Research Methods* (pp. 265-282). SAGE Publications Ltd.

Squillaci, M., & Benoit, V. (2021). Role of CU (CU) Traits on the development of youth with behavioral disorders: A systematic review. *International Journal of Environmental Research and Public Health*, 18(9), 4712. doi:10.3390/ijerph18094712

Statista Research Development (2022). Canada: Resident population 2022, by age. Retrieved from: https://www.statista.com/statistics/444868/canada-resident-population-by-age-group/ (Accessed May 28, 2023).

Statistics Canada. (2023). Population and Demography Statistics. Retrieved from https://www.statcan.gc.ca/en/subjects-start/population_and_demography.

Statistics Canada. (1999). National Longitudinal Survey of Children and Youth. Data User Guide: Cycle 3. Available from https://www150.statcan.gc.ca/n1/en/catalogue/82M0013X201100.

Sweeten, G., Piquero, A. R., & Steinberg, L. (2018). Age and the explanation of crime, revisited. *Journal of Youth and Adolescence*, 47(6), 1400–1412. doi:10.1007/s10964-013-9926-4.

Talari, K., & Goyal, M. (2020). Retrospective studies–utility and caveats. Journal of the Royal College of Physicians of Edinburgh, 50(4), 398-402.

Teichner, G., & Golden, C. J. (2000). The relationship of neuropsychological impairment to conduct disorder in adolescence: A conceptual review. *Aggression and Violent Behavior*, 5(6), 509-528. doi:10.1016/S1359-1789(98)00035-4

Thomson, N. D., Gillespie, S. M., & Centifanti, L. C. (2020). CU traits and fearlessness: A cardiovascular psychophysiological perspective in two adolescent samples using virtual reality. *Development and Psychopathology*, 32(3), 803-815. doi:10.1017/S0954579419001196

Tonmyr, L., Draca, J., Crain, J., & MacMillan, H. L. (2010). Measurement of emotional/psychological child maltreatment: A review. *Child Abuse & Neglect*, 34(9), 647-659. doi:10.1017/S0954579419001196

United States Census Bureau. (2023). Population. Retrieved from https://www.census.gov/data.html .

Vaughan, E. P., Speck, J. S., Frick, P. J., Walker, T. M., Robertson, E. L., Ray, J. V., & Cauffman, E. (2023). Proactive and reactive aggression: Developmental trajectories and longitudinal associations with callous–unemotional traits, impulsivity, and internalizing emotions. *Development and Psychopathology*, 1-9. doi:10.1017/S0954579423000317

Viding, E., Jones, A. P., Frick, P. J., Moffitt, T. E., & Plomin, R. (2012). Heritability of antisocial behavior at 9: Do CU traits matter? *Developmental Science*, 15(6), 814-825. doi:10.1111/j.1467-7687.2007.00648.x

Vitacco, M. J., Neumann, C. S., Caldwell, M. F., Leistico, A. M., & Van Rybroek, G. J. (2006). Testing factor models of the Psychopathy Checklist: Youth Version and their association

with instrumental aggression. *Journal of personality assessment, 87*(1), 74-83. doi:10.1207/s15327752jpa8701_06

Waddell, C., McEwan, K., Shepherd, C. A., Offord, D. R., & Hua, J. M. (2005). A public health strategy to improve the mental health of Canadian children. *Canadian Journal of Psychiatry*, 50(4), 226-233. doi:10.1177/070674370505000406

Wagner, N. J., Hastings, P. D., & Rubin, K. H. (2018). CU traits and autonomic functioning in toddlerhood interact to predict externalizing behaviors in preschool. *Journal of Abnormal Child Psychology*, 46, 1439-1450. doi:10.1007/s10802-017-0374-6

Zahn-Waxler, C., Shirtcliff, E. A., & Marceau, K. (2008). Disorders of childhood and adolescence: Gender and psychopathology. *Annual Review of Clinical Psychology*, 4, 275-303. doi: 10.1146/annurev.clinpsy.3.022806.091358

Zych, I., Ttofi M. M., Farrington D. P., (2019). Empathy and Callous–Unemotional Traits in DifferentBullying Roles: A Systematic Review and Meta-Analysis. *Trauma Violence Abuse*, 20, 3–21. doi:10.1177/1524838016683456

APPENDIX A: CU TRAITS PREDICTIVE OF ANTISOCIAL BEHAVIOR REVIEW

Studies	**Samples**	**Method**	**Result**
Andershed et al. (2002)	N = 1,000; age 14 community sample.	Cross-sectional; self-report of psychopathic traits.	Youth with CU traits reported more frequent and violent conduct disordered behavior compared to non CU controls impulsivity and antisocial behavior
Basque et al. (2012)	N = 80; age 15 to 17 clinical sample.	Longitudinal; clinician rating of CU traits; self-report of conduct problems.	CU traits predicted violent recidivism 2 years later controlling for age.
Frick et al. (2011)	N = 80; age 14 to 19 forensic sample.	Cross-sectional; clinician rating of CU traits.	CU traits were associated with CD symptoms, violent charges, charges, age charge, correlation between CU traits and violent charges stronger than for impulsivity.
Bijttebier & Decoene (2009)	N = 180; age 9 to 19 community sample.	Cross-sectional; teacher and self-reports of CU traits.	CU traits were associated with symptoms of ODD and CD. symptoms of oppositional defiant disorder.
Campbell et al. (2004)	N = 220; age 12 to 19 forensic sample.	Cross-sectional; clinician rating of psychopathic traits including CU traits.	Psychopathic traits were associated with delinquency, aggression, and externalizing problems.
Catchpole & Gretton (2003)	N = 75; age 15 to 19 forensic sample.	Longitudinal; clinician rating of psychopathic traits including CU traits.	Psychopathic traits predicted both violent recidivism and shorter time to reoffending over a 1 year period.
Chabrol et al. (2009)	N = 975; age 14 to 21 community sample.	Cross-sectional; self-report CU traits; self-report of antisocial behavior.	CU traits were associated with antisocial behavior, and substance use.

Chauhan et al. (2012)	N = 120; age 13 to 19 forensic sample.	Longitudinal; clinician rating and self-report of CU traits; self-report delinquency.	CU traits predicted conduct problems and violent offending 2 years later control violent offending.
Colins, et al. (2012)	N = 220; age 16 forensic sample.	Longitudinal; self-report of CU traits; official records of offending.	CU traits did not predict recidivism or other personality including impulsivity.
Decuyper et al. (2014)	N = 535; age 12 to 17 community sample.	Cross-sectional; self-report of CU traits; self-report of delinquency and police contact.	CU traits were associated with level of delinquency and criminal versatility for boys and girls and were associated with police contact.
Dolan & Rennie (2006)	N = 115; age 16 forensic sample.	Longitudinal; clinician rating of CU traits; self-report, parent report records of antisocial problems	CU traits were significantly associated with earlier self-reported age and number of violent offenses, aggression, and externalizing problems.
Edens et al. (2007)	N = 75; age 13 to 17 forensic sample.	Longitudinal; clinician rating of CU traits; official records of offending.	CU traits were unrelated to violent, felony, and general recidivism over ten year follow up.
Essau et al. (2006)	N = 1,440 age 13 to 18 community sample.	Cross-sectional; self-report of CU traits; self-report of antisocial outcomes.	CU traits were associated with aggression, CD, and delinquency for boys and girls.
Fanti et al. (2009)	N = 345; age 12 to 18 community sample	Cross-sectional; self-report of CU traits; self-report of bullying and aggression.	CU traits were associated with bullying and were also associated with Aggression remained significant with proactive aggression.

Fanti & Kimonis (2012)	N = 1,400; age 12 to 14 community sample.	Longitudinal; self-report of CU traits; self-report of conduct problems and bullying.	A group high on conduct problems and with elevated CU traits showed the highest level of bullying at follow-up period compared to those high on only conduct issues.
Frick & Dantagnan (2005)	N = 75; age community sample.	Longitudinal; parent and teacher reports of CU traits; parent report of conduct problems.	CU traits were associated with more stable paths of conduct disorder problems.
Gretton et al. (2004)	N = 158; forensic sample.	Longitudinal; clinician rating of psychopathic traits including CU traits.	CU traits predicted shorter time to violent reoffending over at 10 year follow-up period.
Howard et al. (2012)	N = 80; age forensic sample.	Cross-sectional; self-report of CU traits; self-report of delinquency.	CU traits were associated with self report drug offenses, property offenses, and violent offenses.
Kimonis, et al. (2008)	N = 247; forensic sample.	Cross-sectional; self-report of CU traits; self-report of aggression and reports of delinquency.	CU traits were associated with reactive and aggression, reactive aggression.
Lynam et al. (2007)	N = 1518; community sample.	Longitudinal; self-report of CU traits, including clinician rating of CU.	CU traits were correlated with CU traits in adulthood.
Marsee & Frick (2007)	N = 59; age forensic sample.	Cross-sectional; self-report of CU traits; self-report of aggression.	CU traits were associated with proactive physical aggression and proactive aggression.
Odgers et al. (2005)	N = 125; forensic sample.	Cross-sectional; clinician rating of CU traits;	CU traits were associated with aggression controlling for antisocial behavior.

Roose et al. (2010)	N = 456; community sample.	Cross-sectional; self-report of CU traits; self-report of antisocial behavior.	CU traits were associated with antisocial behavior.
Schmidt et al. (2006)	N = 128; forensic sample.	Longitudinal; clinician rating of CU traits including CU traits reports of offending.	CU traits predicted violent recidivism controlling for prior externalizing issues.
Vitacco et al. (2006)	N = 122; forensic sample.	Cross-sectional; clinician rating of CU traits	Psychopathic traits were associated with instrumental violence in the sample.

APPENDIX B: PREDICTORS OF 'GETTING INTO FIGHTS': LOGISTIC REGRESION MODELS (MISSING DATA IMPUTED)

Predictors	Models 1 to 9[a]		Model 10[b]		Model 11[c]	
Categories	OR	95% CI	OR	95%	OR	95% CI
_____ *Main Predictors*						
Importance of school (very)	1.00		1.00		1.00	
Somewhat	1.46	1.27, 1.68	1.25	1.07, 1.45	1.30	1.13, 1.58
Not very to not at all	2.99	1.92, 4.38	1.86	1.23, 2.82	1.75	1.15, 2.66
Shows sympathy (often)	1.00		1.00		1.00	
Sometimes	1.29	1.13, 1.47	1.01	0.88, 1.17	1.10	0.86, 1.18
Never	1.87	1.47, 2.41	1.15	0.89, 1.50	1.03	0.76, 1.38
Comforts an upset child (often)	1.00		1.00		1.00	
Sometimes	1.50	1.32, 1.71	1.30	1.12, 1.49	1.08	0.92, 1.27
Never	1.97	1.60, 2.34	1.50	1.20, 1.89	1.16	0.90, 1.50
Cruel, bullying or mean (never)	1.00		1.00		1.00	
Sometimes	5.78	4.84, 6.91	5.22	4.36, 6.26	4.34	3.54, 5.30
Often	7.80	4.15, 14.63	7.00	3.62, 13.05	5.55	3.07, 10.0
Covariates						
Age (10 or 11)	1.00				1.00	
12 or 13	0.75	0.65, 0.87			0.65	0.55, 0.77
14	0.54	0.46, 0.63			0.43	0.36, 0.52
Gender (female)	1.00				1.00	
Male	2.05	1.82, 2.33			1.88	1.62, 2.20
Socioeconomic status (highest)	1.00				1.00	
High	1.08	0.85, 1.37			0.97	0.80, 1.38
Middle	1.31	1.05, 1.63			1.20	0.98, 1.63
Low	1.37	1.10, 1.71			1.28	1.08, 1.82
Lowest	1.70	1.34, 2.17			1.49	1.16, 2.05
Parents threaten/hit me (never)	1.00				1.00	
Rarely or sometimes	2.32	1.99, 2.70			1.73	1.47, 2.10
Often or always	3.98	2.88, 5.50			2.03	1.35, 3.01
Parents get angry/yell (never)	1.00				1.00	
Rarely/sometimes	1.40	1.17, 1.66			1.34	1.06, 1.60
Often or always	3.45	2.73, 4.36			2.41	1.76, 3.15

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Nagelkerke R^2 = 20.0%.

APPENDIX C: UNIVERSITY OF WINDSOR RED ETHICS APPROVAL/EXTEMTION

[redacted]

University of Windsor Mail - Publicly Available Data

University of Windsor

[redacted]

Publicly Available Data

2 messages

[redacted]

I recently met with Mr. Campbell to discuss his research plan for his Ph.D. dissertation. He discussed that one of the methods he intended to use was Secondary data analysis of Stats Canada information.

As this is publicly available data and meets the exemption requirements of the TCPS2 (Article 2.2), the REB does not require review of this methodology utilizing this resource.

All the best,

[redacted]

[redacted]

Office of Research Ethics Board

[redacted]

University of Windsor

[redacted]

[redacted]

Please note the office has moved to the 2nd Floor of Chrysler Hall North. If you require assistance please come to 2146 CHN or email ethics@uwindsor.ca.

Article 2.2 Research that relies exclusively on publicly available information does not require REB review when:

a. the information is legally accessible to the public and appropriately protected by law; or

b. the information is publicly accessible and there is no reasonable expectation of privacy.

For the purposes of this Policy, publicly available information is any existing stored documentary material, records or publications, which may or may not include identifiable information. Some types of information are legally accessible to the public in a certain form and for a certain purpose, as specified by law or regulations: registries of deaths, court judgments, or public archives and publicly available statistics (e.g., Statistics Canada public use files), for example. In Canada, all publicly available archives (national, provincial or municipal) have policies governing access to their records. An archival record or database that is subject to restrictions, such as those under access to information and privacy legislation or contractual restrictions imposed by the donor of the records, may also be considered publicly available for the purposes of this Policy.

APPENDIX D: PREDICTORS OF 'GETTING INTO FIGHTS' (OFTEN)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI
Main Predictors						
Importance of school (very)	1.00		1.00		1.00	
Somewhat	0.95	0.68, 1.33	0.74	0.51, 1.06	0.85	0.58, 1.25
Not very to not at all	3.61	2.06, 5.98	1.82	1.00, 3.31	1.68	0.89, 3.19
Shows sympathy (often)	1.00		1.00		1.00	
Sometimes	1.12	0.83, 1.50	0.82	0.59, 1.13	0.85	0.60, 1.21
Never	2.24	1.44, 3.49	0.95	0.55, 1.65	1.02	0.57, 1.82
Comforts upset child (often)	1.00		1.00		1.00	
Sometimes	1.35	1.00, 1.83	1.13	0.81, 1.57	0.98	0.68, 1.41
Never	3.03	2.08, 4.43	2.01	1.30, 3.10	1.61	1.00, 2.59
Cruel, bully or mean (never)	1.00		1.00		1.00	
Sometimes	6.42	4.75, 8.67	6.11	4.42, 8.44	4.66	3.28, 6.62
Often	26.64	15.79, 44.92	25.35	14.67, 43.81	16.80	9.06, 31.16
Covariates						
Age (10 or 11)	1.00		1.00		1.00	
12 or 13	0.68	0.50, 0.92			0.55	0.38, 0.79
14	0.44	0.31, 0.63			0.38	0.25, 0.58
Gender (female)	1.00		1.00		1.00	
Male	2.02	1.52, 2.69			1.71	1.22, 2.41
SES (highest)	1.00		1.00		1.00	
High	0.86	0.50, 1.47			0.68	0.37, 1.26
Middle	1.08	0.66, 1.75			0.84	0.48, 1.46
Low	1.40	0.86, 2.28			1.24	0.72, 2.14
Lowest	1.56	0.93, 2.63			1.14	0.63, 2.08
Parents hit me (never)	1.00		1.00		1.00	
Sometimes	2.25	1.63, 3.10			1.34	0.92, 1.96
Often	8.57	5.57, 13.17			2.49	1.39, 4.46
Parents angry/yell (never)	1.00		1.00		1.00	
Sometimes	1.05	0.68, 1.62			1.04	0.65, 1.66
Often	5.04	3.18, 7.99			3.04	1.73, 5.36

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4,829, 87.2%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 4.89, p = .77. Nagelkerke R^2 = 21.4%.

APPENDIX E: PREDICTORS OF 'REACTS WITH ANGER/FIGHTING' (OFTEN)

Predictors	Models 1 to 9[a]		Model 10[b]		Model 11[c]		Model 12[d]	
Categories	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.17	0.85, 1.61	0.43	0.87, 0.62	1.06	0.74, 1.53	1.05	0.73, 1.51
Not very to not at all	3.58	2.10, 6.10	1.61	0.89, 2.93	1.61	0.85, 3.03	1.64	0.87, 3.09
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.28	0.94, 1.74	0.98	0.70, 1.37	1.06	0.74, 1.52	1.07	0.75, 1.54
Never	3.67	2.44, 5.53	2.10	1.30, 3.37	2.31	1.39, 3.82	2.35	1.42, 3.89
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	1.39	1.03, 1.89	1.09	0.79, 1.52	0.85	0.59, 1.21	0.84	0.57, 1.21
Never	3.36	2.32, 4.87	2.02	1.32, 3.07	1.41	0.89, 2.24	1.43	0.90, 2.26
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	5.61	4.15, 7.58	5.25	3.82, 7.23	4.24	3.00, 5.98	4.25	3.01, 6.00
Often	20.0	11.84, 34.10	17.5	10.02, 30.61	12.32	6.52, 23.26	12.84	6.81, 24.21
Covariates								
Age (10 or 11)	1.00				1.00		1.00	
12 or 13	0.88	0.65, 1.18			0.83	0.59, 1.17	0.83	0.59, 1.17
14	0.40	0.27, 0.58			0.40	0.26, 0.61	0.40	0.26, 0.61
Gender (female)	1.00				1.00		1.00	
Male	3.07	2.62, 4.17			2.80	1.95, 4.02	2.75	1.92, 3.94
SES (highest)	1.00				1.00			
High	0.92	0.56, 1.57			0.78	0.44, 1.37		
Middle	0.84	0.52, 1.37			0.75	0.44, 1.29		
Low	1.22	0.76, 1.97			0.93	0.55, 1.59		
Lowest	1.68	1.02, 2.76			1.19	0.68, 2.08		
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	1.42	1.00, 2.01			0.79	0.53, 1.19	0.79	0.53, 1.20
Often	5.85	3.74, 9.16			2.64	1.46, 4.80	2.81	1.55, 5.06
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	1.05	0.70, 1.56			1.33	0.85, 2.08	1.29	0.82, 2.01
Often	3.01	1.91, 4.73			2.09	1.16, 3.75	1.97	1.10, 3.53

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4,843, 87.4%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 5.04, p = .75. Nagelkerke R^2 = 19.1%.

APPENDIX F: PREDICTOS OF 'KICKS/BITES/HURTS OTHER CHILDREN' (OFTEN)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[d] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.56	0.87, 2.78	1.03	0.55, 1.93	0.98	0.49, 1.96	0.94	0.48, 1.86
Not very to not at all	6.83	3.12, 14.99	2.52	1.03, 6.16	1.93	0.73, 5.13	1.92	0.72, 5.15
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	2.46	1.23, 4.78	1.52	0.74, 3.12	1.38	0.63, 3.02	1.40	0.65, 3.02
Never	8.58	3.95, 18.64	4.30	1.80, 10.31	3.47	1.32, 9.12	3.42	1.30, 9.00
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	1.48	0.85, 2.60	0.84	0.94, 0.51	0.87	0.43, 1.74	0.96	0.49, 1.90
Never	3.07	1.54, 6.14	0.98	0.43, 2.27	0.98	0.39, 2.42	1.15	0.48, 2.76
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	11.31	6.38, 20.05	9.76	5.26, 18.11	8.58	4.39, 16.77	8.48	4.35, 16.54
Often	59.5	28.67, 123.6	47.6	21.43, 105.5	27.4	10.89, 69.06	29.2	11.85, 71.87
Covariates								
Age (10 or 11)	1.00				1.00		1.00	
12 or 13	0.61	0.33, 1.13			0.50	0.23, 1.06		
14	0.71	0.40, 1.28			0.82	0.40, 1.68		
Gender (female)	1.00				1.00		1.00	
Male	1.59	0.96, 2.63			1.49	0.76, 2.88		
SES (highest)	1.00				1.00			
High	0.82	0.33, 2.05			1.02	0.33, 3.23		
Middle	0.74	0.31, 1.76			0.84	0.28, 2.54		
Low	1.01	0.43, 2.38			1.16	0.39, 3.44		
Lowest	1.53	0.64, 3.68			1.04	0.33, 3.36		
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	3.34	1.83, 6.09			1.45	0.73, 2.91	1.47	0.74, 2.93
Often	14.48	7.26, 28.90			2.64	1.05, 6.65	2.76	1.12, 6.80
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	1.29	0.49, 3.37			1.51	0.44, 5.24	1.49	0.43, 5.05
Often	10.15	9.92, 26.31			5.73	1.56, 21.15	5.01	1.40, 18.19

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4, 894, 86.7%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 4.35, p = .82. Nagelkerke R^2 = 28.2%.

APPENDIX G: PREDICTOS OF 'I THREATEN PEOPLE' (OFTEN)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[d] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.62	1.02, 2.58	1.41	0.85, 2.35	1.53	0.89, 2.62	1.41	0.83, 2.40
Not very to not at all	3.85	1.72, 8.61	2.31	0.92, 5.76	1.92	0.74, 5.00	2.23	0.88, 5.69
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.05	0.67, 1.63	0.75	0.45, 1.24	0.62	0.36, 1.08	0.71	0.42, 1.20
Never	0.67	0.71, 3.16	0.63	0.26, 1.50	0.58	0.23, 1.41	0.58	0.23, 1.43
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	0.91	0.59, 1.45	0.77	0.46, 1.24	0.71	0.41, 1.30	0.74	0.43, 1.27
Never	2.13	1.20, 3.78	1.40	0.70, 2.68	1.33	0.66, 2.90	1.42	0.72, 2.81
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	5.82	3.53, 9.59	5.65	3.33, 9.58	4.70	2.68, 8.25	4.80	2.76, 8.34
Often	61.13	33.7, 110.8	61.3	32.59, 115.2	46.97	23.32, 94.6	49.95	25.58, 97.6
Covariates								
Age (10 or 11)	1.00				1.00		1.00	
12 or 13	0.93	0.57, 1.54			0.94	0.51, 1.67		
14	0.83	0.50, 1.39			0.94	0.51, 1.73		
Gender (female)	1.00				1.00		1.00	
Male	1.70	1.11, 2.61			1.45	0.87, 2.42		
SES (highest)	1.00				1.00			
High	1.07	0.47, 2.43			0.88	0.36, 2.14		
Middle	0.93	0.42, 2.04			0.66	0.28, 1.58		
Low	1.58	0.74, 3.36			1.24	0.55, 2.80		
Lowest	1.66	0.73, 3.74			0.97	0.38, 2.43		
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	2.37	1.47, 3.85			1.33	0.75, 2.36		
Often	8.01	4.32, 14.87			1.84	0.79, 4.25		
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	1.20	0.58, 2.46			1.10	0.49, 2.47	0.98	0.46, 2.08
Often	6.82	3.26, 14.27			3.72	1.51, 9.16	3.82	1.73, 8.42

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4,824, 87.1%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 2.57, p = .96. Nagelkerke R^2 = 24.0%.

APPENDIX H: PREDICTOS OF 'DESTROYS OWN THINGS' (OFTEN)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[d] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	0.82	0.57, 1.17	0.77	0.53, 1.12	0.90	0.61, 1.34	0.90	0.61, 1.33
Not very to not at all	2.67	1.50, 4.83	1.94	1.03, 3.87	1.89	0.97. 3.70	1.92	0.98, 3.74
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	0.53	0.38, 0.72	0.48	0.35, 0.67	0.49	0.34, 0.69	0.50	0.35, 0.69
Never	1.60	1.03, 2.46	1.03	0.62, 1.70	1.07	0.64, 1.82	1.10	0.65, 1.87
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	0.89	0.66, 1.22	0.92	0.66, 1.28	0.83	0.58, 1.18	0.89	0.63, 1.26
Never	2.03	1.40, 3.01	1.76	1.14, 2.72	1.41	0.87, 2.27	1.56	0.98, 2.50
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	2.17	1.52, 3.10	2.35	1.61, 3.42	2.03	1.36, 3.04	2.07	1.38, 3.08
Often	4.37	2.13, 8.98	4.34	2.07, 9.11	2.55	1.11, 5.86	2.56	1.12, 5.88
Covariates								
Age (10 or 11)	1.00				1.00		1.00	
12 or 13	0.67	0.49, 0.91			0.64	0.45, 0.91	0.63	0.45, 0.90
14	0.41	0.29, 0.59			0.41	0.28, 0.62	0.41	0.27, 0.61
Gender (female)	1.00				1.00		1.00	
Male	1.42	1.08, 1.89			1.33	0.96, 1.85		
SES (highest)	1.00				1.00		1.00	
High	1.50	0.81. 2.75			1.60	0.79, 3.25	1.62	0.80, 3.29
Middle	1.39	0.78, 2.50			1.62	0.82, 3.17	1.62	0.81, 3.18
Low	2.14	1.21, 3.80			2.53	1.30, 4.90	2.51	1.29, 4.86
Lowest	2.55	1.40, 4.64			2.60	1.30, 5.12	2.57	1.28, 5.14
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	1.24	0.86, 1.79			0.98	0.65, 1,49	1.01	0.67, 1.53
Often	5.21	3.26, 8.32			2.12	1.17, 3.84	2.18	1.20, 3.95
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	0.77	0.52, 1.13			0.94	0.62, 1.42	0.93	0.61, 1.40
Often	2.64	1.70, 4.10			2.49	1.44, 4.24	2.40	1.39. 4.10

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4,829, 87.2%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 5.13, p = .74. Nagelkerke R^2 = 10.9%.

APPENDIX I: PREDICTOS OF 'DESTROYS OTHER'S THINGS' (OFTEN)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI	Model 12[d] OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.32	0.75, 2.33	1.02	0.54, 1.92	1.15	0.59, 2.53	1.16	0.60, 2.25
Not very to not at all	3.53	1.37, 9.06	1.85	0.64, 5.34	1.74	0.57, 5.32	1.62	0.53, 4.95
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	0.73	0.43, 1.27	0.57	0.31, 1.04	0.71	0.37, 1.36	0.69	0.36, 1.32
Never	3.32	1.74, 6.33	1.76	0.79, 3.90	2.10	0.89, 4.92	2.12	0.91, 4.95
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	0.82	0.47, 1.43	0.77	0.42, 1.41	0.73	0.38, 1.43	0.72	0.38, 1.38
Never	2.42	1.30, 4.60	1.40	0.63, 2.92	1.41	0.62, 3.20	1.38	0.63, 3.06
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	2.50	1.30, 4.80	2.44	1.20, 4.95	2.20	1.04, 4.60	2.19	1.05, 4.60
Often	34.94	18.10, 67.4	31.48	15.42, 64.3	23.17	10.37, 51.8	23.04	10.41, 51.0
Covariates								
Age (10 or 11)	1.00				1.00		1.00	
12 or 13	0.46	0.25, 0.79			0.48	0.25, 0.91	0.48	0.25, 0.92
14	0.36	0.20, 0.68			0.37	0.18, 0.78	0.38	0.18, 0.80
Gender (female)	1.00				1.00		1.00	
Male	1.13	0.70, 1.83			0.86	0.48, 1.55		
SES (highest)	1.00				1.00			
High	0.87	0.37, 2.04			0.84	0.33, 2.17		
Middle	0.75	0.33, 1.70			0.76	0.31, 1.90		
Low	0.67	0.30, 1.60			0.53	0.20, 1.38		
Lowest	1.70	0.73, 3.73			0.73	0.27, 1.97		
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	1.48	0.77, 2.87			1.22	0.58, 2.57	1.30	0.63, 2.61
Often	11.17	5.90, 21.23			6.00	2.43, 14.78	7.80	3.70, 16.40
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	0.84	0.41, 1.72			0.84	0.39, 1.80		
Often	3.14	1.45, 6.80			1.32	0.50, 3.50		

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4,834, 87.3%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 5.69, p = .68. Nagelkerke R^2 = 19.6%.

APPENDIX J: PREDICTOS OF 'I TELL LIES AND CHEAT' (OFTEN)

Predictors	Models 1 to 9[a]		Model 10[b]		Model 11[c]		Model 12[d]	
Categories	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Main Predictors								
Importance of school (very)	1.00		1.00		1.00		1.00	
Somewhat	1.91	1.25, 2.93	1.71	1.10, 2.70	1.69	1.40, 2.76	1.67	1.02, 2.72
Not very to not at all	5.72	2.93, 11.16	3.50	1.66, 7.31	3.08	1.41, 6.71	3.21	1.48, 6.98
Shows sympathy (often)	1.00		1.00		1.00		1.00	
Sometimes	1.30	0.81, 1.95	0.98	0.61, 1.60	0.90	0.54, 1.50	0.92	0.55, 1.53
Never	3.64	2.01, 6.43	1.84	0.94, 3.64	1.70	0.83, 3.50	1.74	0.85, 3.57
Comforts upset child (often)	1.00		1.00		1.00		1.00	
Sometimes	1.01	0.68, 1.64	0.37	0.81, 0.50	0.86	0.51, 2.44	0.88	0.54, 1.46
Never	2.70	1.60, 4.50	1.25	0.67, 2.32	1.33	0.68, 2.58	1.39	0.73, 2.65
Cruel, bully or mean (never)	1.00		1.00		1.00		1.00	
Sometimes	4.10	2.60, 6.45	3.26	2.00, 5.30	2.37	1.40, 4.03	2.38	1.40, 4.04
Often	26.32	14.34, 48.3	18.00	9.13, 35.21	11.61	5.51, 24.50	12.17	5.84, 25.36
Covariates								
Age (10 or 11)	1.00				1.00		1.00	
12 or 13	0.87	0.55, 1.39			0.77	0.92, 0.54	0.91	0.53, 1.57
14	0.89	0.56, 1,41			0.85	0.95, 0.55	0.93	0.54, 1.61
Gender (female)	1.00				1.00		1.00	
Male	1.19	0.81, 1.80			1.15	0.72, 1.83		
SES (highest)	1.00				1.00			
High	1.55	0.71, 3.37			1.11	0.49, 2.54		
Middle	1.20	0.56, 2.57			0.79	0.35, 1.80		
Low	1.50	0.69, 3.16			1.01	0.45, 2.26		
Lowest	2.16	0.99, 4.72			1.36	0.60, 3.12		
Parents hit me (never)	1.00				1.00		1.00	
Sometimes	1.88	1.16, 3.04			1.12	0.64, 1.94	1.13	0.65, 1.96
Often	8.50	4.80, 14.91			2.39	1.15, 4.96	2.54	1.23, 5.23
Parents angry/yell (never)	1.00				1.00		1.00	
Sometimes	0.73	0.41, 1.33			0.83	0.43, 1.63	0.81	0.42, 1.60
Often	4.81	2.64, 8.75			2.99	1.39. 6.46	2.87	1.34, 6.17

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4,848, 87.5%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 7.62, p = .47. Nagelkerke R^2 = 16.4%.

APPENDIX K: PREDICTOS OF 'DISOBEDIENT IN SCHOOL' (OFTEN)

Predictors Categories	Models 1 to 9[a] OR	95% CI	Model 10[b] OR	95% CI	Model 11[c] OR	95% CI
Main Predictors						
Importance of school (very)	1.00		1.00		1.00	
Somewhat	1.58	1.02, 2.25	1.55	1.06, 2.26	1.63	1.08, 2.45
Not very to not at all	8.52	5.24, 13.90	6.67	3.90, 11.54	5.93	3.29, 10.71
Shows sympathy (often)	1.00		1.00		1.00	
Sometimes	0.80	0.58, 1.12	0.57	0.49, 0.83	0.58	0.38, 0.85
Never	1.99	1.23, 3.20	0.75	0.42, 1.36	0.85	0.46, 1.57
Comforts upset child (often)	1.00		1.00		1.00	
Sometimes	0.85	0.60, 1.21	0.79	0.54, 1.16	0.79	0.52, 1.21
Never	2.38	1.58, 3.61	1.79	1.11, 2.89	1.80	1.06, 3.01
Cruel, bully or mean (never)	1.00		1.00		1.00	
Sometimes	3.80	2.64, 5.55	3.43	2.32, 5.10	3.36	2.13, 4.92
Often	24.65	14.20, 42.45	20.24	11.10, 36.94	18.06	9.37, 34.82
Covariates						
Age (10 or 11)	1.00		1.00		1.00	
12 or 13	0.73	0.51, 1.05			0.83	0.54, 1.27
14	0.66	0.46, 0.96			0.74	0.47, 1.15
Gender (female)	1.00		1.00		1.00	
Male	1.33	0.98, 1.81			1.10	0.75, 1.60
SES (highest)	1.00		1.00		1.00	
High	1.33	0.73, 2.42			1.35	0.67, 2.63
Middle	1.05	0.58, 1.88			0.97	0.50, 1.90
Low	1.37	0.76, 2.45			1.27	0.66, 2.46
Lowest	1.95	1.07, 3.56				
Parents hit me (never)	1.00		1.00		1.00	
Sometimes	1.71	1.17, 2.49			1.22	0.79, 1.91
Often	4.21	2.39, 7.44			1.73	0.83, 3.60
Parents angry/yell (never)	1.00		1.00		1.00	
Sometimes	1.02	0.64, 1.62			0.92	0.55, 1.52
Often	3.00	1.78, 5.05			1.61	0.84, 3.10

Notes: CI, confidence interval; OR, odds ratio. An odds ratio of 1.00 is the baseline. Missing data was deleted listwise: Participants with valid data on all variables were included (n = 4, 776, 86.2%). [a] Simple regression models, each with one, unadjusted predictor. [b] Main predictors entered together. [c] All predictors (main predictors and covariates) entered together. Little's missing completely at random (MCAR) test: χ^2 (1) = 0.01, p = .95. Hosmer and Lemeshow goodness-of-fit test: χ^2 (8) = 10.64, p = .22. Nagelkerke R^2 = 16.2%.

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