The Longitudinal Associations Between Perfectionism, Depression, and Academic Achievement in High School Students

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Abstract

The longitudinal relation between perfectionism, depression, and academic achievement in high school students, along with the potential mediating effects of depression symptoms were examined. Specifically, 626 Canadian adolescents from the McMaster Teen Study were followed prospectively from Grade 9 to Grade 12. Using path analysis, results demonstrated a positive relation between academic achievement and both self-oriented perfectionism and socially prescribed perfectionism, in particular, in the earlier high school years. Additionally, socially prescribed perfectionism and depression symptoms were found to be concurrently related at each time. Results suggested that developmental pathways between these variables may only begin to emerge toward the end of high school, potentially as a result of increased stress, as well as the developmental increase that is seen in depressive disorders. Finally, a negative reciprocal relation was found between depression symptoms and academic achievement, which supports the idea that depression could either lead to lower achievement or be elicited by failure. Although symptoms of depression were not found to mediate the relation between self-oriented or socially prescribed perfectionism and academic achievement, the expansion of time points examined might help to clarify the developmental pattern of the relation between perfectionism, depression, and academic achievement. Clinical implications, strengths and limitations, and future directions are discussed.

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General Introduction

Around 25-30% of youth are negatively impacted by perfectionism (Flett et al., 2016). Perfectionism is a multidimensional construct that includes both intra-individual and interpersonal features (Fursland, Raykos, & Steele, 2009). Perfectionism involves putting pressure on oneself in order to meet excessively high standards, which then strongly influences the way in which one perceives one's identity (i.e., self-oriented perfectionism; Fursland et al., 2009). Perfectionism may additionally involve striving for perfection in order to meet the perceived expectations of significant others (i.e., socially prescribed perfectionism; Hewitt & Flett, 1991). Researchers have consistently shown a relation between perfectionism and indicators of maladjustment, including links to stress, anger, anxiety, eating disorders, and of particular relevance to the present study, depression (Affrunti & Woodruff-Borden, 2016; Asseraf & Vaillancourt, 2015; Benson, 2003; Chang & Rand, 2000; Hewitt et al., 2002; Vaillancourt & Haltigan, 2018).

Depression is a serious mental disorder that can lead to feelings of sadness and a loss of interest in activities that were once enjoyed (i.e., anhedonia; American Psychiatric Association, 2013). Perfectionism is regarded as an important mechanism by which youth become vulnerable to developing a depressive disorder (Affrunti & Woodruff-Borden, 2016; Vaillancourt & Haltigan, 2018). Depression can also cause changes in appetite, trouble with sleeping, and difficulty thinking and concentrating, which can lead to impairments in functioning at home, work, and school (American Psychiatric Association, 2017). In Canada, about 5% of boys and 12% of girls, age 12-19 years old, have experienced one episode of major depression (Mental Health Commission of Canada, 2013). This translates to 3.2 million Canadian adolescents being at risk for developing a depressive disorder (Mental Health Commission of Canada, 2013). This statistic is alarming because less than 20% of affected youth receive the treatment they need, despite the fact that recognizing and addressing depression can make a positive difference for 80% of depressed youth (Mental Health Commission of Canada, 2013).

Poor psychological adjustment (e.g., depression) can impede academic functioning, leading to decreased achievement motivation (Stoeber & Rambow, 2007), poorer academic

achievement (Accordino, Accordino, & Slaney, 2000), lower grade point average (Fröjd et al., 2008), and even school dropout (Quiroga, Janosz, Bisset, & Morin, 2013). This in turn may set youth on a path for poorer occupational and life outcomes. It is therefore important to understand the links between perfectionism, depression, and academic achievement in order to provide youth with appropriate intervention, especially when perfectionism seems to be on the rise. In a recent cross-sectional meta-analysis consisting of over 40,000 American, Canadian, and British college students, Curran and Hill (2017) found that levels of perfectionism have noticeably increased since 1989. Students today are more demanding of themselves and others and perceive others to be more demanding of them (Curran & Hill, 2017). These are worrying findings, when taking into account the way in which perfectionism can impair life outcomes for youth, including psychological maladjustment and poorer academic achievement. The purpose of the present study was to examine the relation between perfectionism, depression, and academic achievement in high school students, to better understand the temporal relation between these variables. Such an understanding of the chronological ordering allows for more targeted and comprehensive intervention (Masten & Cicchetti, 2010).

The thesis is organized as follows: I begin with a discussion on adolescent development and the development of perfectionism with a discussion and focus on the developmental psychopathology framework. This is relevant to the current thesis as understanding these concepts will help highlight the complexities of adolescent psychopathology and support why this is a critical time period to study. Next, I discuss the concepts of perfectionism, depression, and academic achievement, and their current relation in the literature. Following this, I describe the participants, procedure, and statistical approach of the current study. Finally, I present the results, followed by a discussion and future clinical implications.

Theoretical Background

Adolescent Development

Adolescence represents a significant life stage, marked by many changes, such as those in biological, cognitive, and social development (Cicchetti & Rogosch, 2002; Evans, Borriello, & Field, 2018). Biologically, it is throughout adolescence when puberty takes place, causing hormonal changes in the body, leading to physiological changes in body composition and brain organization (Marshal, 1978; Sisk & Foster, 2004; Arnett, 2007). Cognitively, adolescents experience changes in selective attention (Schiff & Knopf, 1985), memory (Keating, 2004),

processing speed (Kalie & Ferrer, 2007), and the ability to think more abstractly (Arnett, 2007). Socially, adolescents experience a struggle with identity formation, including making sense of important relationships (Kroger, 2004). Additionally, adolescence entails an extensive transitional period between childhood and adulthood, in which the individual is preparing to take on an adult role (Larson & Wilson, 2004), yet is seen as neither a child nor adult (Cicchetti & Rogosch, 2002). So, while adolescents struggle to gain more autonomy and adult responsibilities, social institutions and parents also struggle with the recognition of the adolescent as a full-fledged adult (Cicchetti & Rogosch, 2002). This constant tension, characteristic of the adolescent years, creates conditions for an increase in conflict (Cicchetti & Rogosch, 2002).

Adolescence is thus an interesting and important developmental period to study and one that fits well with being guided by a developmental psychopathology perspective, due to the biological, psychological, and social changes that occur during this time (Cicchetti & Rogosch, 2002). Research guided by a developmental psychopathology perspective is useful to enhance an understanding of adolescent psychopathology, and more broadly, a general understanding of development as a whole (Cicchetti & Rogosch, 2002).

Developmental Psychopathology

Developmental psychopathology is the study of the development of psychological disorders across the lifespan (Cicchetti, 1989). This approach studies the lifetime development of individuals, in order to examine how individual characteristics evolve, which also includes trying to explain how prior experiences contribute to the development of a particular outcome (Cicchetti & Toth, 2009). In other words, developmental psychopathologists study the entire spectrum of developmental processes and functioning, in order to better understand why certain individuals will develop psychological disorders and others will not (Cicchetti & Toth, 2009). Researchers and clinicians highlight the importance of using knowledge of normal development in order to better understand atypical populations, as well as using knowledge of abnormality to better the comprehension of normal development in return (Cicchetti, 1989; Cicchetti & Toth, 2009). This relationship between normal and atypical development is important for understanding development as a whole (Cicchetti & Toth, 2009). Even before psychopathological disorders emerge, specific pathways exist which suggest adaptational failures in normal development, that will likely lead to the development of psychopathology (Cicchetti & Rogosch, 2002). The unique features of psychopathological conditions can therefore provide an

understanding into aspects of typical development that might not otherwise be known, such as outlining developmental processes that have gone wrong, leading individuals to exhibit a particular disorder (Cicchetti & Toth, 2009). The subclinical range of functioning is also important. This is because individuals in this range might be susceptible to the subsequent development of psychopathology as a result of biological, psychological, and/or social changes that can occur throughout the lifespan (Cicchetti & Toth, 2009).

The study of factors that both contribute to and protect against the later development of disorders, such as adolescent depression, help to explain why some individuals develop a psychological disorder while others do not (Cicchetti & Toth, 2009). This can be understood with the help of two important concepts within the developmental psychopathology framework: equifinality and multifinality. *Equifinality* refers to the idea that different developmental pathways can lead to the same outcome (Cicchetti & Rogosch, 1996; Schaffer, 2006). In other words, equifinality explains why a particular psychopathology can result from various developmental trajectories (Cicchetti & Rogosch, 1996). For example, the development of depression in adolescence can be attained by different initial causes and through a variety of developmental mechanisms (Cicchetti & Rogosch, 1996). Some individuals who develop a depressive disorder in adolescence may have a genetic vulnerability for the development of the disorder, while others may have experienced childhood maltreatment, or grown up in a home where a parent was struggling with substance abuse (Cicchetti & Rogosch, 2002). Thus, the shared outcome of depression in adolescence can result from adolescents following varied pathways instead of from all adolescents following the same developmental trajectory (Cicchetti & Rogosch, 2002). *Multifinality*, in contrast, refers to the idea that the same early experiences will not inevitably lead to the same outcome (Cicchetti & Rogosch, 1996; Cicchetti & Toth, 1998; Schaffer, 2006). That is, the same common etiological factors among individuals should not automatically be seen as leading to the same adaptive or maladaptive outcome in each of them (Cicchetti & Rogosch, 1996). Therefore, for example, while children of parents with depressive disorders are deemed at higher risk for the development of depression themselves, not all such individuals will go on to develop depression (Cicchetti & Toth, 1998).

Overall, these concepts encompass the ideas that there are various pathways to the development or suppression of any psychopathological disorder in a person, that previous experiences and influences vary in their relative contribution among individuals, and that there

are a multitude of pathways leading to the development of any behaviour. (Cicchetti 1993; Cicchetti & Rogosch 1996). The concepts of equifinality and multifinality are important to understand in relation to developmental psychopathology, as they help to explain why some individuals develop disorders and other do not. As such, the investigations of adolescent depression should occur in this broad framework. The importance of any single characteristic, pathway, or psychopathological disorder should be studied with the consideration of an individual's complex set of attributes, experiences, and social influences, as well as when these experiences took place within the individual's developmental history (Cicchetti & Rogosch, 1996). Using a developmental psychopathology perspective is important for identifying the etiology of psychological disorders, so that treatment can be applied at an appropriate time and be developmentally relevant (Cicchetti & Toth, 2009). This is why longitudinal studies are especially important for determining the pathways of psychopathology, such as adolescent depression (Cicchetti & Toth, 2009).

Development of Perfectionism

Perfectionistic behaviour is correlated with psychopathology, in large part, through its connection and impact on stress. Perfectionists are susceptible to facing psychological distress because they experience increased levels of exposure to stress combined with having more maladaptive ways of coping with that stress (Hewitt & Flett, 2002). This idea, in combination with the significant increase in levels of self-consciousness, social comparisons, and social evaluations during adolescence, make this developmental period an important one for the development of perfectionism (Flett, Hewitt, Oliver, & Macdonald, 2002). Flett et al. (2002) examine perfectionism from a developmental perspective and, similar to a developmental psychopathology framework, the authors suggest that the development of perfectionism in individuals can be achieved through various developmental pathways. Furthermore, perfectionists vary in important ways, in part, because not all of the perfectionism dimensions are expressed in all individuals (Flett et al., 2002). The authors note that parental factors, environmental pressures, and features arising within the self, are at least three categories of determinants that exert perfectionistic pressures (e.g., temperament and achievement needs) on a person (Flett et al., 2002).

Fleet and colleagues (2002) further explain that perfectionism is likely to develop when children are exposed to parenting that is demanding and controlling, as well and when they grow

up in an environment that stresses the negative consequences of making mistakes. Furthermore, parents promote perfectionism by promoting perfectionistic goals and placing children in situations that emphasize the attainment of highly set standards (Flett et al., 2002). In addition to parental pressures, perfectionism is likely to develop from general environmental factors, including the importance of high personal achievement, commonly valued within individualistic cultures (Flett et al., 2002). Other pressures, such as those resulting from the school environment (e.g., competitive school environment) and those arising within the peer group (e.g., importance peers place on meeting expectations and maintaining standards for social approval) are also likely to contribute to increases in perfectionism (Flett et al., 2002). Factors that stem from within the self, such as an individual's need to please others by being perfect, possessing skills and abilities in an area where perfection is thought to be possible, and a temperament that is marked by excessive determination and some level of fearfulness, are those which are more likely to lead to high self-oriented perfectionism (Flett et al., 2002).

The authors note that to understand the structure of any personality feature, it is most useful to study the processes and influences that support its development (Flett et al., 2002). Because adolescence represents a critical developmental transition period, in which there is reorganization within biological and psychological domains, leading to the appearance of new behavioural patterns (Cicchetti & Rogosch, 2002), including the appearance of increased levels of perfectionism and depressive symptomatology (Flett et al., 2002; Son & Kirchner, 2000), this time period offers unique and important information for intervention and prevention (Cicchetti & Rogosch, 2002). Understanding how these changes interact with one another as well as affect future life outcomes, such as educational functioning, is key for providing adolescents with appropriate treatment. Yet, more research using longitudinal data from this population is required to gain further insight into the relation between these variables.

Literature Review

Perfectionism

Though once thought of as a simple unidimensional measure, perfectionism is now viewed as a complex multifaceted construct (Hewitt & Flett, 1991). Perfectionism consists of both personal and social features, which together and individually can contribute to poor psychological adjustment and hinder overall well-being (Hewitt & Flett, 1991). It is commonly viewed as a "pervasive neurotic style," that involves feelings of failure, guilt, shame, and low

self-esteem (Hewitt & Flett, 1991). However, there is some controversy in the perfectionism research—some researchers have made the distinction between positive and negative perfectionism (Stoeber & Rambow, 2007; Slade & Owens, 1998; Hamachek, 1978) and other researchers believe that no aspect of perfectionism is adaptive (Hewitt & Flett, 1991). Positive perfectionism has been explained as perfectionistic behaviour in which individuals strive for achievement and success (Slade & Owens, 1998), while exhibiting the ability to manage their perfectionistic behaviour based on the situation (Hamachek, 1978). Stoeber and Rambow (2007) found that positive perfectionistic striving was correlated with increased conscientiousness, positive mood, motivation, and life satisfaction (Stoeber & Rambow, 2007). However, the authors noted that individuals who experienced positive perfectionistic striving did not experience perfectionistic concerns, a negative cognitive component of perfectionism that entails being excessively self-evaluative and self-critical (Stoeber & Rambow, 2007). Negative perfectionism, in contrast, has been explained as perfectionistic behaviour that is engaged in order to avoid failures (Slade & Owens, 1998) and involves setting an unachievable level of performance regardless of the situation (Hamachek, 1978).

The distinction between positive and negative perfectionism can be found across much of the literature as one way to distinguish different domains of this construct. In their pioneering research, Hewitt and Flett (1991), who support a maladaptive view of perfectionism, broke down perfectionism into three main dimensions, including self-oriented perfectionism, socially prescribed perfectionism, and other-oriented perfectionism. The difference between these domains of perfectionism is not the behaviour itself, but rather to whom the behaviour is aimed (self or others), or by whom the behaviour is ascribed (socially prescribed; Hewitt & Flett, 1991). Although perfectionism, as a construct, can be broken down into these broad categories, the different dimensions of perfectionism can also co-exist at different levels within an individual (Kljajic, Gaudreau, & Franche, 2017).

Self-oriented perfectionism refers to behaviour which is self-directed, such as setting exceedingly high standards for oneself and strictly and continuously assessing one's own performance (Hewitt & Flett, 1991). Hewitt and Flett (1991) described a motivational component within self-oriented perfectionism, which involves working toward perfection in all aspects of life, while being determined to avoid failures. *Socially prescribed perfectionism* involves striving for perfection due to the belief that significant others (e.g., peers, parents, and romantic partners)

have unrealistic and excessive expectations of the self (Hewitt & Flett, 1991). This type of perfectionism implies a propensity toward social evaluation and striving for perfection for the purpose of gaining or maintaining social acceptance from others (Kljajic, Gaudreau, & Franche, 2017). Socially prescribed perfectionism is motivated by a fear of scrutiny and avoidance of disapproval from others (Hewitt & Flett, 1991). Thus, individuals high on socially prescribed perfectionism believe that their self-worth is conditional on them striving for perfection in their social environment (Kljajic et al., 2017). Finally, *other-oriented perfectionism* consists of attitudes and expectations about the competencies of others (Hewitt & Flett, 1991). Other-oriented perfectionists strictly assess the performance of others, expecting them to be perfect, often leading to impaired interpersonal functioning due to being critical, distrustful, and hostile toward others (Hewitt & Flett, 1991).

For my thesis, I focused on self-oriented and socially prescribed perfectionism. These dimensions of perfectionism are well captured by the Child and Adolescent Perfectionism Scale (CAPS), which was used in the present study. The CAPS is a reliable and widely used measure of perfectionism in child and adolescent research (Asseraf & Vaillancourt, 2015; Flett et al., 2016;). Other-oriented perfectionism is not encompassed by the CAPS, as there is an absence of information with regards to the development and appearance of this subtype of perfectionism in youth (Flett et al., 2016). Furthermore, to my knowledge, no reliable measure exists for this subtype of perfectionism in adolescents, which is why I did not examine this subtype

Perfectionism has been shown to be a stable personality trait. In a sample of 105 depressed adults, Cox and Enns (2003) found evidence for trait stability for socially prescribed perfectionism and concerns over making mistakes, and that these traits worsened during a depressive episode. In a study examining perfectionism as a vulnerability for psychopathology among 302 undergraduate students, perfectionism exhibited the strongest inter-individual stability, which is consistent with it being a stable trait (Sherry, Richards, Sherry, & Stewart, 2014). Evidence for the stability of perfectionism has also been found throughout adolescence. Asseraf and Vaillancourt (2015) found 2-year stability estimates for both self-oriented and socially prescribed perfectionism across grades 7 and 8 (β=0.66, β=0.53 respectively), in their study of 653 children. Vaillancourt and Haltigan (2018), in their study of the joint trajectory of depression and perfectionism in adolescence from grades 7 through 12, also found evidence for the stability and continuity of socially prescribed perfectionism over time. Adolescence

conformed to one of three perfectionism stability pathways – low and stable (41.6%), moderate and increasing (40.5%), or high and increasing (17.9%). That is, students' level of perfectionism either remained stable or increased over the 6-year time span (Vaillancourt & Haltigan, 2018). Overall, the long-term stability of perfectionism can put individuals at risk for psychological maladjustment (Vaillancourt & Haltigan, 2018; Cox & Enns, 2003), and emphasizes the need for early intervention.

Perfectionism and Depression

It is estimated that depression affects approximately one in six people, often leading to emotional and physical problems, and thereby decreasing an individual's ability to properly function in various domains of their life (American Psychiatric Association, 2017). Furthermore, even subthreshold symptoms (having fewer than the five or more symptom count required to meet DSM-5 diagnostic criteria) of adolescent depression, can create a vulnerability for future adverse outcomes including later depression and suicidal behaviour (Fergusson, Horwood, Ridder, & Beautrais, 2005). Results found by Fergusson et al. (2005), suggested that subthreshold symptoms of depression in adolescents may not be fleeting, as the future mental health risks of those with subclinical depression are similar to those experienced by individuals with a clinical diagnosis of major depression (e.g., later depression and suicidal behaviour).

Researchers have consistently shown a link between perfectionism and depression (Affrunti & Woodruff-Borden, 2016; Asseraf & Vaillancourt, 2015; Flett et al., 2016; Hewitt et al., 2002; Hewitt & Flett, 1991; Vaillancourt & Haltigan, 2018). Investigators have suggested that perfectionism may be an aspect of personality that can influence an individual's susceptibility to developing a depressive disorder (Huggins, Davis, Rooney, & Kane, 2008). Huggins et al. (2008) found that children who had been diagnosed with a depressive disorder also presented with significantly increased levels of both self-oriented perfectionism and socially prescribed perfectionism. This link was supported by Rogers et al. (2009), who found that perfectionism correlated with more severe depression symptoms in a sample of 422 12-17-year-olds who had already been diagnosed with a depressive disorder. Furthermore, Hewitt et al. (2002) found that high levels of perfectionism in children aged 10-15 years was associated with a multitude of adjustment problems (e.g., depression and anxiety).

Although perfectionism has generally been shown to correlate with psychological distress and poorer well-being, the distinctive dimensions of perfectionism have also been shown to

relate differentially to maladaptive outcomes (Hewitt & Flett, 1991). With regards to research concerning self-oriented perfectionism, the literature consists of mixed findings. For instance, Stoeber and Rambow (2007) found striving for perfection to be positively correlated with school achievement and motivation for school, and negatively correlated with depressive symptoms. However, this does not take into consideration adolescents' negative reactions to imperfection or perceived parental pressure to be perfect. Other researchers have found no correlation between self-oriented perfectionism and depression symptoms. For example, O'Connor, Rasmussen, and Hawton (2010) found no correlation between striving for perfection and measures of distress six months later. Additionally, Chang and Rand (2000) found no correlations between self-oriented perfectionism and psychological symptoms one month later. In contrast, some researchers have supported a positive correlation between self-oriented perfectionism and depression. Hewitt and Flett (1993) found that the tendency toward attaining high personal standards and constant self-evaluations leads to a vulnerability to depression by amplifying disappointments and self-punishment and reducing gratification and self-rewards. Furthermore, Hewitt et al. (2002) found that self-oriented perfectionism was positively correlated with depression, especially when children were undergoing both self-related achievement stress and social stress. Therefore, perfectionism may act as a vulnerability factor to depression by increasing the unpleasantness of experienced stress (Hewitt et al., 2002). These findings expanded on research from 1993, where Hewitt and Flett found that achievement related stress was particularly important in predicting the severity of depression among self-oriented perfectionists. Hewitt et al. (2002) stated that this may be one reason for the mixed findings in the research in terms of the correlation between self-oriented perfectionism and depression. The authors explain that self-oriented perfectionism may function in such a way that it may require the interaction of a stressor, in particular an achievement-oriented stressor (e.g., schoolwork perceived as being too hard), in order to lead to depression (Hewitt et al., 2002).

In contrast, socially prescribed perfectionism has been consistently correlated with negative affect, depression, and self-harm and suicide (O'Connor et al., 2010; Stornelli, Flett, & Hewitt, 2009; Hewitt et al., 2002; Chang & Rand, 2000). In a study examining personality predictors of outcome for adolescents hospitalized for suicide ideation, Enns, Cox, and Inayatulla (2003) found a significant positive correlation between socially prescribed perfectionism and scores on the Suicidal Ideation Questionnaire. Additionally, in a study investigating the

interaction between perfectionism and life stress over a 6-month period in a sample of 515 adolescents, O'Connor et al. (2010) found that socially prescribed perfectionism directly predicted depression over time with no evidence that this relation was moderated by life stress. Hewitt et al. (2002) also found that socially prescribed perfectionism was positively correlated with depression in a sample of 114 children.

In Stornelli et al.'s (2009) study examining 223 students in grades 4 through 7, from regular, gifted, and arts programs, the authors found that socially prescribed perfectionism was associated with increased levels of sadness and fear among students across all three participating populations. In particular, the authors noted that for students in the gifted group, socially prescribed perfectionism was also correlated with decreased levels of happiness (Stornelli et al., 2009). Chang and Rand (2000) also found that socially prescribed perfectionism was positively correlated with scores on measures of psychopathological symptoms. In their study, wherein 215 college students were examined over a period of one month, the authors found that participants with higher levels of socially prescribed perfectionism also reported greater psychological symptoms (depression, anxiety, and hostility) one month later. In addition, greater socially prescribed perfectionism correlated with increased feelings of hopelessness, which is a significant contributor to depressive symptomatology (Chang & Rand, 2000).

Huggins et al. (2008) explain that children are still developing their identity and are thus reliant on those around them, including their parents and teachers, for guidance on their behaviour. Therefore, their perceptions of expectations to be perfect from these adults are important to them and when they believe that they are failing, maladaptive cognitions may ensue (Huggins et al., 2008). This may explain the strong relation between socially prescribed perfectionism and depressive symptoms/disorders in youth. Furthermore, more strict, demanding, and critical parents may put children at a risk for the development of maladaptive perfectionistic cognitions (Huggins et al., 2008). This is supported by Damian, Stoeber, Negru, and Băban (2013) who found that adolescents who believed that their parents had strict expectations of them showed higher levels of socially prescribed perfectionism 7-9 months later.

In their 2016 study, Affrunti and Woodruff-Borden found a positive correlation between socially prescribed perfectionism and negative affect (i.e., emotional reactivity such as anger/frustration, discomfort, fear, sadness, and ability to be soothed), anxiety, worry, and depression in children aged 7 to 13 years old. Importantly, the authors found that perfectionism

actually hindered treatment progress of these disorders in children, such that children who scored higher on perfectionism showed less improvement over time (Affrunti & Woodruff-Borden, 2016). Similar results were found by Jacobs et al. (2009), in a sample of 439 clinically depressed adolescents, who were randomized across four different treatment conditions (designed to evaluate the effectiveness of treatment for adolescents with major depressive disorder; Treatment for Adolescents With Depression Study Team, 2003). They assessed perfectionism using the Perfectionism subscale of the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) and found that adolescents who had a higher perfectionism DAS score at baseline continued to exhibit higher levels of depression across the 12-week treatment period, regardless of the treatment condition (Jacobs et al., 2009). This is important, as there are clear clinical implications for working with highly perfectionistic youth. As explained by Jacobs et al. (2009), clinicians may find it useful to assess perfectionism among depressed adolescents in order to target these cognitions in therapy, such that cognitions associated with the need to be perfect either for oneself or for others can be addressed and modified (Vaillancourt & Haltigan, 2018).

Although there is a high positive correlation between perfectionism and depressive symptomatology, few researchers have examined the direction of this relation longitudinally. In their study of 230 adolescent girls and 230 adolescent boys, Shahar, Blatt, Zuroff, Kuperminc, and Leadbeater (2004) found that for girls, depressive symptoms and self-criticism were linked to a downward cycle, whereby setting unrealistically high standards for the self, combined with negative self-evaluation when these standards are not met, created a vulnerability for depressive symptoms. These depressive symptoms subsequently worsen self-criticism, which then causes worsened depressive symptoms, and so forth (Shahar et al., 2004).

Sherry et al. (2014), in their 12-month longitudinal study of 302 undergraduate students, found that perfectionism (as measured by doubts about performance abilities, negative reaction to failure, concern of other's evaluation, and self-criticism) created a vulnerability for the development of depression, such that being a self-critical perfectionist led to increases in depressive symptoms but not the other way around. In contrast, results found by Asseraf and Vaillancourt (2015) supported a model whereby increases in depressive symptoms led to increases in perfectionism, in particular, socially prescribed perfectionism. These results suggest that depressive symptoms in childhood may lead individuals to believe that others may have unrealistically high standards of them, which they must satisfy (Asseraf & Vaillancourt, 2015).

Affrunti and Woofruff-Borden (2016) found similar outcomes in their study, such that negative affect in childhood may predispose individuals toward developing strict standards as a way to deal with their distress. However, this maladaptive effort to cope with distress may, in turn, lead to further internalizing psychopathology by increasing the inflexibility of cognitions and hopelessness (Affrunti & Woodruff-Borden, 2016). Vaillancourt and Haltigan (2018) found that adolescents' depression trajectory was a better predictor of socially prescribed perfectionism than the reverse.

In the present study I was interested in further examining this relation. Even if depressive symptoms appear first, creating a vulnerability for the development of perfectionism, being perfectionistic also has an effect on the maintenance of depressive symptoms (Hewitt, Flett, Ediger, Norton, & Flynn, 1998). As explained by Hewitt et al. (1998), being perfectionistic influences the prevalence and severity of stressors as well as one's ability to cope with these stressors. Individuals who demonstrate increased levels of perfectionism may continue to be at risk for future depression, in particular, if the perfectionism is not thoroughly addressed in cases where treatment occurs (Hewitt et al., 1998). This, in turn, can affect many domains of an adolescent's life, including how they function academically and their achievement in this realm.

Effects of perfectionism and depression on academic achievement

Academic achievement is a multidimensional construct that consists of a variety of learning outcomes. Academic achievement represents an individual's performance outcomes as decided by the educational institution and includes factors such as the ability to acquire knowledge in particular subjects and other cognitive goals (Steinmayr, Meißner, Weidinger, & Wirthwein, 2014). A common measure of academic achievement is grade point average (GPA) which represents a student's average of all final grades (Steinmayr et al., 2014). A student's GPA is often used by universities and employers to evaluate a student's overall capabilities (Steinmayr et al., 2014). Succeeding in academics is therefore of great importance for young students because it determines one's ability to continue with higher education, which also influences one's occupational prospects (Steinmayr et al., 2014). Therefore, determining and examining factors which can impede academic functioning and achievement for youth is crucial, so that intervention can occur promptly, thereby providing students with the best possible chance at future success.

As discussed, perfectionism has been shown to be one such factor that can lead to long-term impairments in academic achievement, as it can undermine learning and performance in educational settings (Flett et al., 2016). In their study of 510 undergraduate students, Kljajic et al. (2017) created a 2 x 2 model to investigate the coexistence of different levels of self-oriented and socially prescribed perfectionism within an individual. Their results determined that individuals with pure socially prescribed perfectionism (high socially prescribed perfectionism and low self-oriented perfectionism) suffered the worst outcomes, including higher academic burnout, lower school engagement, and lower semester GPA (Kljajic et al., 2017). Academic burnout is defined as a detachment from schoolwork and feelings of inadequacy toward academic endeavors and has been found to decrease life satisfaction and increase depressive symptoms (Kljajic et al., 2017). School engagement is defined as a tendency to be more flexible when working on school-related assignments, and continue to persist in challenging situations, even in the face of obstacles, and is associated with a more positive attitude and increased energy toward academically-related tasks (Kljajic et al., 2017). As explained by Kljajic et al. (2017), socially prescribed perfectionists put so much pressure on themselves that it leads to negative feelings toward school and therefore decreased engagement in school related tasks (Kljajic et al., 2017). Moreover, it has been found that students who are more self-critical are less likely to partake in academic and social activities for their inherent enjoyment (Shahar et al., 2006). These individuals then experience a decline in their well-being including emotional exhaustion and tiredness, loss of interest for schoolwork, and a general feeling of incompetence as a student (Kljajic et al., 2017).

In a study of 198 university students, Verner-Filion and Gaudreau (2010) found that socially prescribed perfectionism, in particular, was negatively correlated with academic performance (as measured by GPA) and academic satisfaction (how students were feeling in school). They found that this relation was mediated by the negative correlation between socially prescribed perfectionism and mastery-related achievement goals; a category of goals that promote comprehensive learning and understanding (Verner-Filion & Gaudreau, 2010). They also found that socially prescribed perfectionism had a positive correlation with two types of performance-related goals, such that socially prescribed perfectionists were equally motivated by the need for achievement success and the avoidance of failures (Verner-Filion & Gaudreau,

2010). This equal need to succeed while avoiding failure led to a decrease in overall academic performance and decreased academic satisfaction (Verner-Filion & Gaudreau, 2010).

Though perfectionism alone may have a direct negative relation with academic achievement in youth, it can also correlate with depressive symptoms to impede academic functioning even further. In other words, depressive symptoms may mediate the relation between perfectionism and academic achievement. A mediating variable explains the relationship between two other variables (such that a causal chain is created with a path from the independent variable to the dependent variable, through the mediating variable; Baron & Kenny, 1986). For example, in their 2007 study, Stoeber and Rambow examined the relation between perfectionism and academic motivation, achievement, and well-being among 121 adolescents. The authors' found that students' negative reactions to imperfection were associated with maladaptive outcomes including physical complaints and depressive symptoms (Stoeber & Rambow, 2007). These outcomes then undermined students' academic motivation and well-being (Stoeber & Rambow, 2007). Additionally, In a study of 123 tenth through twelfth graders, Accordino et al. (2000) found depression to mediate the relation between setting high standards and long-term academic performance. The authors found that the higher the discrepancy between what students intended to achieve and what they actually achieved, the lower the overall achievement subsequently became. This is because endorsing unrealistically high standards leads to increased depressive symptoms, which then ends up impairing overall performance long-term (Accordino et al., 2000). Furthermore, in a study of 402 university and college students, Uzun et al. (2014), found that depression mediated the relation between perfectionism and procrastination, which is defined as a tendency to put off impending tasks and is associated with negative outcomes for students including lower grades. Longitudinal data allow researchers to explore many facets of a mediation model that are not possible in cross-sectional data, including whether an effect is stable across time as well as evidence for temporal precedence (MacKinnon, Fairchild, & Fritz, 2010). In the present study I examined the possible mediation effects of depression in the relation between perfectionism and academic achievement over four years, in order to contribute to this body of research.

Overall, the existing research demonstrates that perfectionism and self-critical cognitions have a strong relation with depressive symptoms, which have negative effects on academic functioning and achievement in youth. This is important considering the direct relation and

harmful effects of depression on academic achievement. In their 2008 study of over 2000 13-17-year-olds, Frojd et al. found that the more students' self-reported GPA had declined from the preceding semester, the more commonly the adolescents were depressed. Furthermore, depression was associated with difficulties in concentration, social relationships, self-reliant school performance, and reading and writing, as well as the subjective feeling of schoolwork as highly taxing (Fröjd et al., 2008). This was further supported by DeSocio and Hootman (2004), who found that school performance, was significantly impaired in depressed children and adolescents due to symptoms such as poor concentration, distractibility, insomnia, irritability, and low self-esteem. Negative affect has also been shown to influence behaviour in learning scenarios by leading to the tendency to give up more quickly, lowered attention, anxiety and stress in relation to achievement situations, and overall lowered school performance (Masi et al., 2000). In fact, in their study of 150 adolescents, Masi et al., (2000) found that emotional attitudes about schooling and learning were significantly related to depressive symptoms.

Orgilés, Gómez, Piqueras, and Espada (2014), in their study of 658 Spanish children, found that children who were experiencing symptoms of depression exhibited poorer school performance, as measured by increased course failures, fewer courses being reported with a grade of 'excellent', and more overall repeated school years. This study helps to demonstrate that the relation between depressive symptoms and academic achievement exists across cultures. Finally, in their six-year longitudinal study of 493 adolescents, Quiroga et al. (2013) similarly found that self-reported symptoms of depression assessed when participants were in the seventh grade, led to an increased risk of school dropout in later adolescence. Ultimately, adolescents struggling with depression have more troublesome patterns of academic functioning and thus achieve lower GPAs compared to non-depressed students (Quiroga et al., 2013). Overall, adolescents with higher depressive symptoms had a 23% increased probability of dropping out of school (Quiroga et al., 2013).

Considering the potentially harmful relation between perfectionism, depression, and academic achievement in youth, it is important to advance research that will help outline what these relations look like over time, by determining the patterns that occur throughout child development (Affrunti & Woodruff-Borden, 2016). To my knowledge, existing longitudinal studies on this topic are relatively short-term in nature. For example, Verner-Filion and Gaudreau (2010) examined the effects of perfectionism on academic achievement over the span

of several weeks; however, they did not include depressive symptomatology. Sherry et al. (2014) looked at how perfectionism was a vulnerability factor for depression over a 12-month period but did not include further assessment with regard to academic achievement. Affrunti and Woodruff-Borden (2016) also looked at the trajectory from negative affect to internalizing symptoms, with perfectionism playing a mediating role, but did not include academic achievement. Kljajic et al. (2017) examined the effects of perfectionism on academic achievement over the span of one school semester (roughly four months); however, they did not examine the role of depressive symptomatology. As explained by Shahar et al. (2006), who examined the interaction of self-criticism and depressive symptomatology to predict subsequent GPA over one year, it is important for studies to include multiple data points in order to allow for the investigation of developmental trajectories and cross-lagged effects among these constructs. Considering how few studies have examined perfectionism, depression, and academic achievement in an adolescent community sample with a longitudinal design over many years, these developmental patterns have yet to be fully described. In the present study, I used a 4-year longitudinal design to help shed light on this important problem.

Research Questions

The purpose of the present study was to examine the longitudinal relation between perfectionism, depression, and academic achievement in high school. This is important, as it may help guide the future development and implementation of essential intervention strategies. The following research questions were addressed:

1. What is the direct relation between perfectionism and academic achievement?
2. What is the temporal sequence among perfectionism, depression, and academic achievement?
3. What is the mediating role of depressive symptomatology in the relation between perfectionism and academic achievement?

It was predicted that a direct relation would exist between perfectionism and academic achievement. It was expected that socially prescribed perfectionism would have a negative effect on adolescent academic achievement, while self-oriented perfectionism would have a positive effect on achievement, due to higher levels of conscientiousness and goal striving that are seen in such individuals. It was also predicted that depressive symptomatology would play a mediating

role in this relation, such that perfectionism would increase depression symptoms, which would then lead to lower academic achievement.

Methodological Framework

The present study is guided by a post-positivist framework. Post-positivism is a research methodology, often used in the social sciences, that focuses on observing, discovering, and quantifying the natural relations that exist between phenomena (Abrutyn, 2013; Payne & Payne, 2004). Post-positivists believe that by conducting empirical research, hypotheses can be tested and falsified using statistical procedures to arrive at objective knowledge about the world (Popper, 1959). Unlike positivists, post-positivists understand that the researcher influences most aspects of the research process, such as the delineation of a research question, the selection of particular measurement instruments and analytic procedures, as well as the interpretation of the data.

Research involving perfectionism, depression, and academic achievement has primarily been conducted using quantitative methods, mainly through the collection and subsequent analysis of survey data (e.g. Asseraf & Vaillancourt, 2015; Shahar et al., 2006; Verner-Filion & Gaudreau, 2010). Quantitative researchers use measurable data, often gathered from experiments or surveys, in order to seek facts and causes of social phenomena (Crowther & Lancaster, 2009). It is a form of deductive research, whereby analyses are applied to measurements in order to test a theory and generate conclusions (Payne & Payne, 2004; Watson, 2015). Quantitative research is advantageous because it is based on principles of reliability, validity, and generalizability. Reliability refers to consistency of measurements when repeatedly testing a group or population, while validity is the extent to which the interpretation of test scores resulting from a particular test can be supported with theory and evidence (American Educational Research Association et al., 2014). Finally, generalizability is the extent to which results from a sample can be applied to the larger population (Polit & Beck, 2010). For these reasons, I will be using a quantitative approach for the present study.

Methodology

Participants and Procedure

Data for this study were drawn from the McMaster Teen Study. The McMaster Teen Study is an ongoing prospective study, that began in the Spring of 2008. This longitudinal study examines the relations between bullying, mental health constructs, and academic achievement

among youth. At Time 1, participants were in the fifth grade and were recruited from a random sample of 51 schools within a large Southern Ontario Public School Board. At Time 1, and in the Spring of each subsequent year, parent's provided consent for their child to participate in the study and for access to Ontario Student Records. Students also provided yearly assent to participate in the study. At Time 1, 875 participants consented to take part in the study. Of participants who initially consented, 703 provided longitudinal data. The majority of these participants were White (71.4%), and about half were girls (52.8%).

At Time 1, participants completed a paper/pencil version of the survey in their classrooms, which assessed constructs related to peer victimization, mental health, and academic achievement. Subsequently, participants had the option of completing the survey from home, either on paper or online. Parent interviews were also completed by telephone, in each year of the study, by a trained research assistant. Participants were compensated with gift cards for partaking in the study (for more information, see Vaillancourt, Brittain, McDougall, & Duku, 2013).

The present study consists of a sample of 626 participants (due to attrition that occurred over time; 54.5% girls and 45.5% boys), assessed from Time 5 (T5; Grade 9) to Time 8 (T8; Grade 12) when participants were in high school, as research has shown this to be a pivotal time span to examine psychopathological risk factors and mental health outcomes (Neufeld, Dunn, Jones, Croudace, & Goodyer, 2017; Kutcher & Venn, 2008; Cicchetti & Rogosch, 2002). There is a large increase in depression that occurs post puberty. For instance, depression affects 2% of prepubertal children and 5-8% of adolescents (Son & Kirchner, 2000). Furthermore, in a mixed-methods study conducted among two private high schools, Leonard et al. (2015), found that one of the most significant sources of chronic stress for students stemmed from the pressure to succeed academically, as superior high school grades are imperative for admission into top tier universities. High school is a crucial period of life, which is why it is important to explore these relations at this timepoint.

Measures

Perfectionism. Perfectionism was measured using the Child and Adolescent Perfectionism Scale (CAPS) and was completed by participants at each time point. CAPS is a 22 item self-report measure that examines both self-oriented and socially prescribed perfectionism and contains items such as "I try to be perfect in everything I do" and "There are people in my

life who expect me to be perfect" (Flett, Hewitt, Boucher, Davidson, & Munro, 2000). All items are rated on a five-point Likert-type scale, with higher scores indicating higher levels of perfectionism. The dimensional nature of the CAPS has been confirmed using factor analysis (Flett, Hewitt, & Davidson, 1990). The internal consistency of both the self-oriented subscale (α = 0.79-0.82) and socially prescribed subscale (α = 0.85-0.87) of the CAPS are high for the present study (Time 5 through 8).

Depressive symptoms. Depressive symptoms were measured as part of the Behavior Assessment System for Children, Second Edition Self-Report of Personality for Adolescents (BASC-2 SRP-A), which was completed by participants at all time points. This version is designed for use with adolescents who are still attending high school (Reynolds & Kamphaus, 2004). The depression scale has good internal consistency, and high factor loadings on internalizing problems (0.84; Reynolds & Kamphaus, 2004). The depression subscale contains 12 items, including "I feel sad" and "Nothing ever goes right for me". Higher scores on this scale indicate higher levels of depressive symptoms. The internal consistency of the depression subscale is high in the present study (α = 0.88-0.91).

Academic achievement. Academic achievement was measured using students' yearly overall GPA, by way of their Ontario Student Records (OSR). An OSR contains an evaluation of the student's achievement of the curriculum expectations in each school subject for that reporting period. Grades were scored as percentages. An overall annual GPA was calculated by taking an average of the marks within each year, with a lower GPA indicating lower academic achievement.

Covariates. Socioeconomic (SES) status was controlled for by way of parental income, parental education, and race/ethnicity, as these variables have been linked to adolescent academic achievement and psychological distress (Rosen, Sheridan, Sambrook, Meltzoff, & McLaughlin, 2018; Mossakowski, 2008; Davis-Kean, 2005). Parental household income was measured on an 8-point scale, ranging from "less than $20,000" to "more than $80,000." Parental education was measured using a 5-point scale, in order to determine the level of education attained. Response options on this scale included: did not complete high school, competed high school, college diploma or trades certificate, university undergraduate degree, and university graduate degree. Participants' biological sex was also controlled for, as rates of depression are significantly higher among girls and women than among boys and men (Altemus, Sarvaiya, &

Neill Epperson, 2014; Thapar, Collishaw, Pine, & Thapar, 2012; Hopcroft & Bradley, 2007). As these variables are shown to be highly consistent over time, covariate data used in the present study were measured at Time 1 (or Time 2, if Time 1 data were missing). Parental income and education were collected from the main caregiver who participated in the study, while ethnicity is a combined measure from both the child and parent report.

Data Analysis

Statistical Package for the Social Sciences (SPSS v. 24) was used to examine missing data. A Missing Completely at Random (MCAR) analysis was completed, followed by a series of chi-square and independent sample *t*-tests to determine if significant differences existed between individuals in the analytic sample and those in the nonanalytic sample.

Using Mplus8 version 8.1, I used a developmental cascade model to describe the relation between perfectionism, depression, and academic achievement, explore the directionality of these relations, and determine the potential mediating role that depressive symptomatology may play. Developmental cascades are defined as the combination of consequences of effects and transactions occurring in a system over time (Masten & Cicchetti, 2010). Specifically, this model looks at how behaviour which exist early in the system, continue and spread over time to either promote or undermine future development (Masten & Cicchetti, 2010). Developmental cascades require longitudinal data with repeated assessments of multiple domains over time (Masten & Cicchetti, 2010). Developmental cascade research is important because it has the ability to inform and test models which are essential to understanding pathways of maladaptation and psychopathology (Masten & Cicchetti, 2010). This knowledge is crucial for the design of strategically timed intervention (Masten & Cicchetti, 2010).

Cascade models were examined using path analysis with maximum likelihood robust (MLR) estimation. To test model fit, a series of nested models were performed with statistical fit being assessed at each step, with all future models including the parameters estimated in the previous model (Vaillancourt et al., 2013). Model 1 included within-time covariance terms between study variables (e.g., Grade 9 self-oriented perfectionism with Grade 9 socially prescribed perfectionism). In Model 2, stability paths were added between repeated measures (e.g., Grade 10 self-oriented perfectionism to Grade 11 self-oriented perfectionism). In Model 3, cross-lagged paths were added between study variables at adjoining time points (e.g., Grade 9 self-oriented perfectionism to Grade 10 depression symptoms). Fit indices such as the chi-square

statistic, the comparative fit index (CFI), the root mean square residual (SRMR), and Akaike Information Criterion (AIC) were used to assess model fit. Once the final model was identified, follow-up analyses were conducted to investigate the effects of control variables and the statistical significance of indirect pathways, which were tested using the MODEL INDIRECT command (Lee & Vaillancourt, 2018), with particular attention to the potential mediating role of depression symptoms.

Results

Missing Data Analysis

A Missing Completely at Random (MCAR) test was completed using SPSS. Results indicated that the data were not missing completely at random (x^2=618.948, *df*=438, *p*=0.000). A series of chi-square and independent sample t-tests were therefore conducted to determine what significant differences exist between individuals in the analytic sample and individuals in the nonanalytic sample. In comparison to the nonanalytic sample, individuals in the analytic sample were more likely to be White (x^2=21.21, *df*=1, *p*=0.00), more likely to have a higher household income (t(770)=-5.94, *p*=0.00), and more likely to have parents with a higher level of education (t(805)=-7.48, *p*=0.00).

Descriptive Statistics

The descriptive statistics for all study variables are presented in Table 1, and bivariate correlations are presented in Table 2. All study variables demonstrated skewness and kurtosis values that were acceptable for path analysis (i.e., less than 3 and 10 respectively; Kline, 2015). All correlations between self-oriented perfectionism and socially prescribed perfectionism were statistically significant. Self-oriented perfectionism was significantly positively correlated with depression symptoms within each time point, with the exception of Grade 11. Other significant positive correlations include: self-oriented perfectionism in Grade 12 with depression symptoms in Grade 10 and 11, and self-oriented perfectionism in Grade 11 with depression symptoms in Grade 12. Socially prescribed perfectionism was significantly positively correlated with depression symptoms at all time points.

Self-oriented perfectionism was significantly positively correlated with GPA at all time points. Socially prescribed perfectionism was significantly positively correlated with GPA at 4 times points (socially prescribed perfectionism in Grade 11 and Grade 12 with GPA in Grade 9, and socially prescribed perfectionism in Grade 11 and 12 with GPA in Grade 10). Depression

symptoms were significantly negatively correlated with GPA at most time points with the exception of depression symptoms in Grade 9, 10, and 11 with GPA in Grade 12.

Developmental Path Models

Model fit statistics for each step are found in Table 3. The final path model had good fit, x^2=76.839, *df*=40, *p*=0.000; CFI=0.992; RMSEA=0.038 (90% CI=0.025-0.051); SRMR=0.017; AIC=31480.665. (see Figure 1 for model with standardized estimates). Model 1 consisted of within-time covariances and had poor fit to the data, x^2=4114.766, *df*=96, *p*=0.000; CFI=0.220; RMSEA=0.259 (90% CI=0.252-0.265); SRMR=0.328; AIC=35406.590. Within each time point self-oriented perfectionism was concurrently related with socially prescribed perfectionism and GPA. Self-oriented perfectionism was also concurrently related with depression symptoms in Grades 9 and 12. Socially prescribed perfectionism was concurrently related with depression symptoms within each time point, though was not related with GPA within any time point. Finally, depression symptoms and GPA were concurrently related within each time point. In Model 2, the across-time stability paths were added, which resulted in a significantly better fit to the data, x^2=346.449, *df*=84, *p*=0.000; CFI=0.946; RMSEA=0.071 (90% CI=0.063-0.078); SRMR=0.092; AIC=31662.275. All variables showed stability across time.

Cross-lagged paths between self-oriented perfectionism, socially prescribed perfectionism, depression symptoms, and GPA were added in Model 3. This resulted in significantly better fit than Model 2, x^2=239.228, *df*=48, *p*=0.000; CFI=0.961, RMSEA=0.080 (90% CI=0.70-0.90); SRMR=0.044; AIC=31627.055. There were several significant cross-lagged paths across time. From Grade 9 to Grade 10 and from Grade 10 to Grade 11, there were significant positive cross-lagged effects from GPA to self-oriented perfectionism. From Grade 9 to Grade 10 there was a significant negative cross-lagged effect from depression symptoms to GPA and from GPA to depression symptoms. From Grade 10 GPA to Grade 11 socially prescribed perfectionism, there was a significant positive cross-lagged effect, as well as from Grade 10 socially prescribed perfectionism to Grade 11 self-oriented perfectionism. Finally, there was a significant positive cross-lagged effect from Grade 11 self-oriented perfectionism to Grade 12 socially prescribed perfectionism, and from Grade 11 socially prescribed perfectionism to Grade 12 depression symptoms.

In Model 4, the two-year stability paths were included, which resulted in significantly better fit than Model 3, x^2=76.839, *df*=40, *p*=0.000; CFI=0.992; RMSEA=0.038 (90%

CI=0.025-0.051); SRMR=0.017; AIC=31480.665. All variables showed significant stability paths across two-years. Model 5 includes the addition of the covariates: ethnicity, parental education, parental income, and gender. Although the fit of Model 5 was still good, x^2 = 122.477, *df* = 89, *p* = 0.011; CFI = 0.994; RMSEA = 0.025 (90% CI = 0.012-0.035); SRMR = 0.026, the AIC of Model 4 (31480.665) was significantly lower than Model 5 (36857.984), indicating a better fit. Model 4 also had fewer parameters (112) in comparison to Model 5 (141), which indicates a more parsimonious model. This demonstrates that Model 4 had significantly better fit than Model 5. Model 4 was therefore retained as the final model (see Figure 1).

Indirect effects. Given the significant cross-lagged pathways, indirect effects were tested using bootstrap confidence intervals (N = 5000, with 95% confidence): from Grade 9 depression symptoms to Grade 11 self-oriented perfectionism through Grade 10 GPA, from Grade 9 depression symptoms to Grade 11 socially prescribed perfectionism through Grade 10 GPA, from Grade 10 GPA to Grade 12 socially prescribed perfectionism through Grade 11 self-oriented perfectionism, and from Grade 10 GPA to Grade 12 depression symptoms through Grade 11 socially prescribed perfectionism. One indirect effect was found to be statistically significant: Grade 10 GPA to Grade 12 socially prescribed perfectionism through Grade 11 self-oriented perfectionism, M = 0.02, 95% CI [0.001-0.003].

Discussion

The purpose of the present study was to examine the longitudinal associations between perfectionism, depression, and academic achievement over the high school years. This research is important to understand the relation between personality and psychopathology, including factors that may contribute to the development of psychopathology among adolescents and impair future life outcomes. This knowledge may then help guide the development of prevention and intervention strategies. To contribute to this body of research, I built a developmental cascade model over the span of the four high school years, including the constructs of self-oriented perfectionism, socially prescribed perfectionism, depression symptoms, and GPA as obtained from students' Ontario Student Record.

Pathways for Perfectionism and Academic Achievement

Consistent with the literature, a direct relation existed between perfectionism and academic achievement. The results demonstrated, that in particular, GPA in Grade 9 positively predicted self-oriented perfectionism in Grade 10, and GPA in Grade 10 positively predicted

self-oriented perfectionism in Grade 11. This is fitting, seeing as self-oriented perfectionism has been described as including a strong motivational component (Hewitt & Flett, 1991), and striving for perfection has been found to be positively correlated with greater engagement, motivation for school, and school achievement (Stoeber & Rambow, 2007).

However, while striving for perfection has been found to be correlated with conscientiousness and motivation, perfectionistic concerns and negative reactions to imperfection, other aspects of self-oriented perfectionism, which entail being excessively self-evaluative and self-critical, especially regarding perceived failure, have been found to be correlated with lower well-being (Stoeber & Rambow, 2007). Therefore, it is important to consider the multidimensional nature of perfectionism and how the relation between GPA and self-oriented perfectionism might affect an adolescent long-term. The potential harmful effects of high levels of self-oriented perfectionism, which include an increased vulnerability to the development of psychopathology such as depressive disorders (Hewitt & Flett, 1993), can have serious consequences on future life outcomes. Individuals high on self-oriented perfectionism are characterized by the personally demanding nature of their standards and are constantly striving to do better. Therefore, even when a standard for performance is met, it is often viewed as inadequately personally challenging and is subsequently raised (Shafran, Cooper, & Fairburn, 2002). This puts individuals in a vicious cycle of never being satisfied with their performance, setting higher and more unrealistic standards for themselves, and defining themselves in terms of their ability to achieve their goals (Burns, 1980), which can have negative consequences on one's self-perception and mood.

Regarding the relation between GPA and socially prescribed perfectionism, the association is less clear, with only one significant pathway of GPA in Grade 10 positively predicting socially prescribed perfectionism in Grade 11. Although this is not repeated across additional years of study, bivariate correlations are significantly positive between Grade 9 and 10 GPA and socially prescribed perfectionism in Grade 11, as well as Grade 9 and 10 GPA and socially prescribed perfectionism in Grade 12 (see Table 2). In other words, increases in GPA are related to increases in socially prescribed perfectionism across time. However, due to the high stability of these constructs and high within-time correlations, the ability to detect cross-lagged effects was likely underpowered (Berry & Willoughby, 2017).

Although these results are less consistent to what is found in most of the literature, whereby high socially prescribed perfectionism is related to lower academic achievement (Kljajic et al., 2017), it is difficult to determine whether the positive correlation between GPA and socially prescribed perfectionism demonstrated in the present study, originates from initial perceived pressures to succeed or whether school success leads adolescents to feeling the need to maintain this perception of perfection for others. Individuals high on socially prescribed perfectionism believe that they must pursue and maintain perfectionistic standards to keep their connection with their social world and to please significant others within it (Kljajic et al., 2017).

The large majority of literature developing around perfectionism and academic achievement in youth has been focused on university students, who likely function differently from adolescents in high school, especially with regards to their social environment. Research has demonstrated that social fears become predominant during adolescence, with an increased sensitivity to social evaluations (van der Bos, van Duijvenvoorde, & Westenberg, 2016). Social-evaluative threat happens when a significant part of one's self-identity may be judged negatively by others and leads to increased stress among adolescents (van der Bos et al., 2016). The relation between GPA and socially prescribed perfectionism in high school may therefore be affected by this, especially for those who deem high academic performance to be an important part of their identity. The study of additional time points, specifically those throughout the middle school years, would be useful in order to obtain a fuller understanding of this developmental trajectory.

It is also important to note that perfectionism may be contextual or domain specific, with individuals exhibiting varying levels of perfectionism depending on the context (Dunn, Gotwals, & Dunn, 2005). This is because individuals with perfectionism often have high standards in areas of life that are personally significant to them (Shafran et al., 2002). Therefore, perfectionistic tendencies in the school environment may be different from other life domains or from global perfectionistic tendencies, depending on the individual (Dunn et al., 2005) and their socio-cultural environment.

Pathways for Perfectionism and Depression

As expected, a positive relation was found between perfectionism and depression. Specifically, a significant positive concurrent correlation was found between perfectionism (both self-oriented and socially prescribed) and depression symptoms within each time point. Additionally, socially prescribed perfectionism in Grade 11 significantly positively predicted

depression symptoms in Grade 12. This is consistent with literature that posits that perfectionism may be a feature of personality that can influence an individual's susceptibility to developing a depressive disorder (Huggins et al., 2008). This may be explained by the idea that people with high levels of socially prescribed perfectionism are pursuing success due to external pressure (Gaudreau, Franche, Gareau, 2016). Accordingly, they are motivated by a desire to achieve rewards in order to please significant others (Kljajic et al., 2017), rather than self-determined motivation.

Although this pathway was not repeated in prior years, socially prescribed perfectionism and depression symptoms were significantly positively correlated across all time points (see in Table 2). These results support a reciprocal relation between socially prescribed perfectionism and depression symptoms, supporting the notion that perfectionism and depression symptoms may be linked in a phenomenological cycle in adolescence. In other words, while perfectionism may create a vulnerability for depression (or depression a vulnerability for perfectionism), the presence of one may also exacerbate the within-person level of the other over time. This is because experiencing a depressed mood, for example, may increase a person's self-focused attention, especially as it relates to failure (Shahar et al., 2004). Furthermore, for individuals with high levels of perfectionism, any perceived failures lead to further self-criticism and self-evaluation, maintaining the negative view they have of themselves (Shafran et al., 2002). Motivation is also typically affected in individuals with depression, which increases the likelihood that highly set standards would not be met. This, in turn, maintains negative self-judgments and low mood (Shafran et al., 2002). The excessive reliance on self-evaluation and judging one's performance in a dichotomous manner (either as being successful or a failure) that is definitive of perfectionism, correspond to similar cognitive errors (e.g., negative attributional style) that have been identified in cognitive models of depression (Huggins et al., 2008; Shafran, et al., 2002; Abramson, Seligman, Teasdale, 1978). Dysfunctional cognitive schemas add to the development of depression, while also being risk factors for the persistence of depressive episodes (Huggins et el., 2008). Although the relation between socially prescribed perfectionism and depression symptoms is clearly significant, the expansion of time points studied, both before and after the high school years, may help clarify the exact developmental direction of this relation.

Regarding the relation between self-oriented perfectionism and depression symptoms, there was a concurrent relation within each time point. Although there were no significant cross-lagged paths, there were significantly positive across-time correlations: Grade 10 and 11 depression symptoms with Grade 12 self-oriented perfectionism, as well as Grade 11 self-oriented perfectionism with Grade 12 depression symptoms. This is consistent with the overall literature which has found more inconsistencies existing in the relation between self-oriented perfectionism and depression (O'Connor et al., 2010; Hewitt et al., 2002; Chang & Rand, 2000), likely related to the difficulties of parsing out the behaviour of striving for perfection with the cognitions of self-judgment and self-criticism when perfection is not achieved, as well as the potential requirement of a stressor for this relation to be significant.

However, considering the increase in depressive symptomatology and disorders that is seen throughout development, in particular during and after adolescence (Flett et al., 2002; Son & Kirchner, 2000), combined with the high stability of perfectionism over time, this might help to explain the presence of a single significant pathway presenting only from Grade 11 socially prescribed perfectionism to Grade 12 depression symptoms. Though few studies have examined the specific developmental trajectory of perfectionism in adolescence, Vaillancourt and Haltigan (2018), found that adolescents' level of perfectionism either remained stable or increased between Grades 7 through 12. Herman, Wang, Trotter, Reinke, and Ialongo (2013) found that for socially prescribed perfectionism, adolescents belonged to one of four developmental groups: consistently high scores over time, consistently low scores over time, increasing scores over time, or decreasing scores over time. Interestingly, for adolescents with increasing socially prescribed perfectionism scores over time, the authors found a delayed onset, whereby scores accelerated only in Grade 10. Additionally, the authors found self-oriented perfectionism to be either stable over time or steadily increase beginning in Grade 7. The notion that both depression symptoms and levels of perfectionism seem to display an increasing trend throughout adolescence might help to explain the appearance of a significant pathway only at the end of high school, as well as the more consistent findings in the relation between perfectionism and depression that are found in studies that use a university student population.

Furthermore, results in the present study demonstrated that perfectionism (both self-oriented and socially prescribed) and depression symptoms were found to be highly stable across time, which also speaks to the persistence of this trait and of symptoms of depression. This is

important given the discussed consequences of continuously high levels of perfectionism (lower achievement and lower well-being) and depression symptoms. Research has shown that the future mental health risks of even subthreshold symptoms of depression in adolescents, are similar to those experienced by individuals with a clinical diagnosis and include later depression and suicidal behaviour (Fergusson et al., 2005). Furthermore, symptom reduction, with early intervention, may itself lead to continued symptom reduction in the future (Wichstrøm, Belsky, & Steinsbekk, 2017). Therefore, the high stability of perfectionism and symptoms of depression demonstrated in the present study contribute important information to the necessity of addressing these concerns at an early age to prevent such maladaptation from persisting into adulthood and affecting future educational, occupational, and interpersonal life outcomes.

Pathways for Depression and Academic Achievement

Consistent with the literature, the results from the present study demonstrated that a significant relation between GPA and depression symptoms exists. In particular, GPA in Grade 9 negatively predicted depression symptoms in Grade 10, while depression symptoms in Grade 9 also negatively predicted GPA in Grade 10. In other words, a decrease in GPA, for example, predicts an increase in depression symptoms and vice versa, supporting a negative reciprocal relation between depression and GPA. This is further supported by the significant negative across-time correlations between Grade 9 through 12 depression symptoms and GPA in Grade 9, 10, and 11, respectively, and Grade 12 depression symptoms with GPA in all high school years. The results also demonstrated a negative concurrent correlation between depression symptoms and GPA in Grade 9 and 12. This is consistent with the literature which explains that depression could either lead to a decrease in performance or be elicited by current failure (Frojd et al., 2008). Studies have found that the lower a student's GPA was compared to the previous semester, the more likely they were to show symptoms of depression, and the more likely they were to perceive increased difficulties with their schoolwork (Frojd et al., 2008). Furthermore, symptoms of depression including poor concentration, distractibility, insomnia, and irritability, all of which impair school performance (DeSocio & Hootman, 2004), help to explain this bidirectional relation.

The concurrent correlation between depression symptoms and GPA in Grade 9 and 12 is interesting to note, considering these time points align with the transition in and out of high school; times requiring simultaneous social, emotional, and academic adjustment (Evans et al.,

2018). Researchers have found that the transition to secondary school leaves adolescents especially vulnerable to decreased levels of academic achievement (Evans et al., 2018). Eccles et al. (1993), explain the importance of looking at the fit regarding the needs of early adolescents compared to the opportunities provided to them in the secondary school environment. According to research conducted by Evans et al. (2018), the high school environment differs from primary education in that classrooms are typically larger, students are switching between classrooms and teachers for each subject throughout the day, students must create new student-teacher relationships, as well as adjust to new academic standards, which tend to be higher and require more intrinsic motivation, all of which affect academic performance outcomes. These factors may also increase stress among students, consequently affecting mood, as adolescent stress is a key correlator of depressive phenomena (i.e. depressed mood, symptoms, and disorders; Compas, Orosan, & Grant, 1993). Furthermore, Anda et al. (2000) concluded that testing, grades, homework, and other pressures within the school environment are among the most recurring stressors reported by adolescents. In addition, students' grades become more important at the end of high school, as these grades are critical for admission into university. Leonard et al. (2015), found that the pressure to succeed academically was one of the most substantial sources of stress for students, as better high school grades are necessary for admission into top tier universities. Furthermore, the attainment of higher education affects future occupational outcomes and life success. Therefore, it is fitting that adolescents' level of stress may follow an increasing trajectory throughout high school.

Indirect Effects

Interestingly, only one significant indirect pathway was found: Grade 10 GPA to Grade 12 socially prescribed perfectionism through Grade 11 self-oriented perfectionism. These results demonstrate that while socially prescribed perfectionism may be directly affected by GPA (as demonstrated in the pathway from Grade GPA in Grade 10 to socially prescribed perfectionism in Grade 11), there is also an indirect effect on later socially prescribed perfectionism through the association with self-oriented perfectionism. This may be explained by the idea that for adolescents with demonstrated high achievement in school, doing well in school may increase their already existing self-oriented perfectionistic tendencies and may also bring about praise from significant others for this high achievement. If such praise is internalized by adolescents as

a condition of worth and external pressures to maintain this perception of perfection, then socially prescribed perfectionism may be affected as a result.

Overall, while depression was not found to significantly mediate the relation between perfectionism and academic achievement in the present study as hypothesized, a significant relation nevertheless exists between these variables. As mentioned, expanding the time points studied to include preadolescence would be advantageous for a more in depth understanding of the developmental pathways between these variables.

Strengths and Limitations

A major strength of the present study is its longitudinal design, over the course of a number of years when adolescents are undergoing important developmental changes. Longitudinal studies allow for an evaluation of the strength and direction of change over time (Caruana, Roman, Hernández-Sánchez, & Solli, 2015); information that cannot be obtained from cross-sectional studies. To my knowledge, existing longitudinal studies which examine the relation between perfectionism, depression, and academic achievement in adolescents, range in duration from only several weeks to twelve months (Kljajic et al., 2017; Affrunti & Woodruff-Borden, 2016; Sherry et al., 2014; Verner-Filion & Gaudreau, 2010). Furthermore, the present study used a more objective measure of academic achievement than self-reported grades. Very few studies have used teacher derived GPA obtained from official school records. In fact, most studies have used self-reported grades as a measure of achievement, due to their ease of accessibility. However, self-reported grades have been shown to be unreliable (Kuncel, Crede, & Thomas, 2005).

A limitation to the present study involves missing data. Individuals in the analytic sample were significantly different from those in the nonanalytic sample regarding ethnicity, household income, and level of parental education. This means that individuals in the analytic sample may not be representative of the initial cohort. For example, more at-risk adolescents were likely lost. Researchers have shown that individuals with a higher socioeconomic status is related to higher academic achievement (Rosen, Sheridan, Sambrook, Meltzoff, & McLaughlin, 2018; Mossakowski, 2008; Davis-Kean, 2005) and better mental health outcomes (Rutter, 2003). Additionally, there are several potential limitations of the present study which may contribute to why there are few repeated cross-lagged pathways. The large across-time stability and within-time covariance may under power the study to detect all potentially significant cross-lagged

pathways (Berry & Willoughby, 2017). Developmental phenomena or sex differences may also be contributing to this; however, sex differences could not be examined because the study was under powered for a multi-group comparison (Vaillancourt & Brittain, 2019; Farrell & Vaillancourt, 2019; Krygsman & Vaillancourt, 2019). Another limitation is the possibility of inflated shared variance between self-oriented perfectionism, socially prescribed perfectionism, and depression, seeing as they are all self-reported measures. The current study could also benefit from the inclusion of additional time points in order to incorporate the pre and post-adolescent years to gain an even greater comprehensive view of the developmental pathways of perfectionism, depression, and academic achievement. Future research would benefit from exploring these relations by expanding the years studied.

Clinical Implications

The findings from the present study support the notion that a complex relation exists between personality characteristics, psychopathology, and academic achievement in adolescents. It is therefore important that clinicians, particularly those working with youth or in the school environment, be aware of students who demonstrate lowered achievement and be mindful of the extent of reasons for why this might be the case, especially considering the fact that schools have been recognized as essential for the detection of youth mental health disorders (Green et al., 2013). Understanding the effects of personality and psychopathological factors, as well as the link between them, on academic achievement is important to help school professionals identify at risk students and ensure appropriately targeted treatment. An understanding of the interplay between perfectionism, depression, and academic achievement in the particular context of adolescent development is crucial in order to provide adolescents with tools for overcoming maladaptation to mitigate lasting negative effects as they move into adulthood. The results from the present study may help clinicians gain more in depth knowledge of this relation.

Working with adolescents with high levels of perfectionism can be challenging, especially considering the demonstrated stability of this trait along with its multidimensional nature. Adolescents with high perfectionism believe that their self-worth is contingent on their performance and ability to meet their goals regardless of how unrealistic they may be. Pressure is exerted on the self from within and/or perceived to be exerted on the self from others. It is therefore important for clinicians to foster an environment of self-acceptance and help

adolescents to understand that a person can be accepted even if changes can be made (Greenspoon, 2014).

Targeting these cognitions in addition to other common cognitive distortions experienced by adolescents with high levels of perfectionism is key. The cognitive styles of individuals with perfectionism, especially the way they form their cognitive evaluations, affect the relation between perfectionism and psychological distress (Jahromi, Naziri, & Barzeger, 2012). Such individuals often exhibit all-or-nothing thinking, whereby set standards are either met or not, and when standards are not met, these individuals often experience guilt and self-blame (Shafran et al., 2002). Furthermore, performance is constantly and strictly evaluated with information processing biases, such that selective attention is given to errors and failures, while success is discounted (Shafran et al., 2002). These cognitive features are also often common among people with depression, as maladaptive cognitive styles contribute to the development of depressive disorders (Huggins et al., 2008). In particular, Beck's cognitive theory of depression emphasizes the negative cognitive triad as a particular vulnerability to the development of depressive disorders (Reilly, Ciesla, Felton, Weitlauf, & Anderson, 2011; Beck 1967). This involves negative beliefs regarding the self, the world, and the future, including thoughts such as: "If I don't succeed, I am a failure" (Reilly et al., 2011). These cognitive beliefs often lead to a negative self-concept which is additionally a cognitive vulnerability to the development of depression (Reilly et al., 2011). Such a cycle can be quite damaging especially in adolescence. Additionally, early schemas are what are used to process subsequent experiences such as those into adulthood (Jahromi et al. 2012). Therefore, when dysfunctional cognitive schemas exist in adolescence and intervention does not take place, they will be carried into adulthood, likely leading to further maladaptation. The underlying cognitive similarities between perfectionism and depression help to explain the relation that exists between these variables. Such research also provides clinicians with a potential focus for treatment, such that working through these cognitive distortions may be essential to positive treatment outcomes.

Important to note is the high stability found in high school of both perfectionism (self-oriented and socially prescribed) and depression, especially considering the notion that high levels of perfectionism impair treatment outcomes of depression (Jacobs et al., 2009; Blatt, Quinlan, Pilkonis, & Shea, 1995). Studies have found perfectionism to be a significant impairing factor in the treatment of depression across treatment modalities (e.g., pharmacotherapy,

cognitive-behavioural therapy, interpersonal therapy, placebo; Blatt & Zuroff, 2002; Blatt et al., 1995). As discussed, perfectionism is related to feelings to failure, shame, guilt, and hopelessness, all of which are significant contributors to psychopathology. Perfectionistic cognitions have also been found to impair an individual's ability to form an early therapeutic alliance (Blatt & Zuroff, 2002), an essential factor for successful therapy. It is therefore important for clinicians to be mindful of how an individual's personality characteristics, such as exhibiting high levels of perfectionism, can have an effect on the treatment process. In treatment, it may be important for clinicians to help adolescents identify perfectionism as a problem in order to help them implement alternate ways of thinking and behaving to expand and change the way they go about self-evaluations, including identifying and changing dichotomous thinking and selective attention to errors, and working through hypervigilant scrutinising of performance (Shafran et al., 2002).

These findings were particularly significant for short-term outpatient treatment (Blatt et al., 1995); the type of treatment most available in communities and school contexts. An important implication is therefore the need for further research and development of short-term treatments for adolescents with perfectionism and depression, based on a more in depth understanding of the developmental relation between these variables and the effects on academic achievement. Adolescence is an important developmental turning point. It is crucial then, that at risk adolescence be identified and provided with the appropriate treatment, in order to reduce harmful life lasting consequences.

Conclusion

This study contributes important knowledge to the field of education and psychology, by providing essential information on the relations between personality characteristics, psychopathology, and achievement in adolescents. Specifically, information regarding the varying levels of perfectionism and depression symptoms in adolescents, and the consequences of this relation on subsequent academic achievement for youth, can be used to guide necessary prevention and intervention measures for youth at risk for mental health or academic difficulties. This is essential since well-timed and targeted interventions have the potential to interrupt negative developmental cascades and promote positive ones, by both decreasing the kind of adolescent issues that would lead to future and more severe issues in adulthood, and by targeting

improvements in competence that can then lead to an increase in better functioning in the future (Masten & Cicchetti, 2010).

References

Abramson, L.Y., Seligman, M.E.P., & Teasdale, J.D. (1978). Learned helplessness in humans: Critique and reformulation, *Journal of Abnormal Psychology*, *87*, 49–74.

Abrutyn, S. B. (2013). *Positivism* [Data set]. Oxford University Press. https://doi.org/10.1093/obo/9780199756384-0142

Accordino, D. B., Accordino, M. P., & Slaney, R. B. (2000). An investigation of perfectionism, mental health, achievement, and achievement motivation in adolescents. *Psychology in the Schools, 37*(6).

Affrunti, N. W., & Woodruff-Borden, J. (2016). Negative Affect and Child Internalizing Symptoms: The Mediating Role of Perfectionism. *Child Psychiatry & Human Development, 47*(3), 358–368. https://doi.org/10.1007/s10578-015-0571-x

Altemus, M., Sarvaiya, N., & Neill Epperson, C. (2014). Sex differences in anxiety and depression clinical perspectives. *Frontiers in Neuroendocrinology*, *35*(3), 320–330. https://doi.org/10.1016/j.yfrne.2014.05.004

American Educational Research Association (Ed.). (2011). *Report and recommendations for the reauthorization of the institute of education sciences*. Washington, D.C: American Educational Research Association.

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5), Fifth edition*. 2013.

Anda, D. de, Baroni, S., Boskin, L., Buchwald, L., Morgan, J., Ow, J., … Weiss, R. (2000). Stress, stressors and coping among high school students. *Children and Youth Services Review*, *22*(6), 441–463. https://doi.org/10.1016/S0190-7409(00)00096-7

Arnett, J. J. (2007). Emerging Adulthood: What Is It, and What Is It Good For? *Child Development Perspectives*, *1*(2), 68–73. https://doi.org/10.1111/j.1750-8606.2007.00016.x

Asseraf, M., & Vaillancourt, T. (2015). Longitudinal Links Between Perfectionism and Depression in Children. *Journal of Abnormal Child Psychology*, *43*(5), 895–908. https://doi.org/10.1007/s10802-014-9947-9

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Beck AT. Depression: Clinical, experimental, and theoretical aspects. Harper & Row; New York, NY: 1967.

Benson, E. (2003). The many faces of perfectionism. Monitor on Psychology, 34(10). Retrieved from http://www.apa.org/monitor/nov03/manyfaces.aspx

Berry, D., & Willoughby, M. T. (2017). On the Practical Interpretability of Cross-Lagged Panel Models: Rethinking a Developmental Workhorse. *Child Development*, *88*(4), 1186–1206. https://doi.org/10.1111/cdev.12660

Blatt, S. J., Quinlan, D. M., Pilkonis, P. A., & Shea, M. T. (1995). Impact of perfectionism and need for approval on the brief treatment of depression: The National Institute of Mental Health Treatment of Depression Collaborative Research Program revisited. *Journal of Consulting and Clinical Psychology*, *63*(1), 125–132. https://doi.org/10.1037/0022-006X.63.1.125

Blatt, S. J., & Zuroff, D. C. (2002). Perfectionism in the therapeutic process. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment.* (pp. 393–406). https://doi.org/10.1037/10458-016

Burns, D. (1980). The perfectionist's script for self-defeat. *Psychology Today*, November, 34–52.

Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, *7*(11), E537-540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63

Cicchetti, D. (1989). Developmental psychopathology: Some thoughts on its evolution. *Development and Psychopathology*, *1*(01), 1. https://doi.org/10.1017/S0954579400000201

Cicchetti, D. (1993). Developmental Psychopathology: Reactions, Reflections, Projections. *Developmental Review*, *13*(4), 471–502. https://doi.org/10.1006/drev.1993.1021

Cicchetti, D., & Rogosch, F. A. (1996). Equifinality and multifinality in developmental psychopathology. *Development and Psychopathology*, *8*(4), 597–600. https://doi.org/10.1017/S0954579400007318

Cicchetti, D., & Rogosch, F. A. (2002). A developmental psychopathology perspective on adolescence. *Journal of Consulting and Clinical Psychology*, *70*(1), 6–20. https://doi.org/10.1037/0022-006X.70.1.6

Cicchetti, D., & Toth, S. L. (1998). The development of depression in children and adolescents. *American Psychologist*, *53*(2), 221–241. https://doi.org/10.1037/0003-066X.53.2.221

Cicchetti, D., & Toth, S. L. (2009). A developmental psychopathology perspective on adolescent depression. In S. Nolen-Hoeksema, & L. Hilt (Eds.), *Handbook of Adolescent Depression* (pp. 3-31). New York, NY: Taylor & Francis.

Chang, E. C., & Rand, K. L. (2000). Perfectionism as a Predictor of Subsequent Adjustment: Evidence for a Specific Diathesis-Stress Mechanism Among College Students. *Journal of Counselling Psychology*, *47*(1), 129–137.

Compas, B. E., Orosan, P. G., & Grant, K. E. (1993). Adolescent stress and coping: Implications for psychopathology during adolescence. *Journal of Adolescence*, *16*(3), 331–349. https://doi.org/10.1006/jado.1993.1028

Cox, B. J., & Enns, M. W. (2003). Relative stability of dimensions of perfectionism in depression. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement*, *35*(2), 124–132. https://doi.org/10.1037/h0087194

Crowther, D., & Lancaster, G. (2009). *Research methods: a concise introduction to research in management and business consultancy* (2. ed). Amsterdam: Elsevier Butterworth-Heinemann.

Curran, T., & Hill, A. P. (2017). Perfectionism is increasing over time: A meta-analysis of birth cohort differences from 1989 to 2016. Psychological Bulletin. https://doi.org/10.1037/bul0000138

Damian, L. E., Stoeber, J., Negru, O., & Băban, A. (2013). On the development of perfectionism in adolescence: Perceived parental expectations predict longitudinal increases in socially prescribed perfectionism. *Personality and Individual Differences*, *55*(6), 688–693. https://doi.org/10.1016/j.paid.2013.05.021

Davis-Kean, P. E. (2005). The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment. *Journal of Family Psychology*, *19*(2), 294–304. https://doi.org/10.1037/0893-3200.19.2.294

DeSocio, J., & Hootman, J. (2004). Children's Mental Health and School Success. *The Journal of School Nursing*, *20*(4), 189–196. https://doi.org/10.1177/10598405040200040201

Dunn, J. G. H., Gotwals, J. K., & Dunn, J. C. (2005). An examination of the domain specificity

of perfectionism among intercollegiate student-athletes. *Personality and Individual Differences*, *38*(6), 1439–1448. https://doi.org/10.1016/j.paid.2004.09.009

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48*(2), 90–101. https://doi.org/10.1037/0003-066X.48.2.90

Enns, M. W., Cox, B. J., & Inayatulla, M. (2003). Personality Predictors of Outcome for Adolescents Hospitalized for Suicidal Ideation. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*(6), 720–727. https://doi.org/10.1097/01.CHI.0000046847.56865.B0

Evans, D., Borriello, G. A., & Field, A. P. (2018). A Review of the Academic and Psychological Impact of the Transition to Secondary Education. *Frontiers in Psychology, 9*. https://doi.org/10.3389/fpsyg.2018.01482

Fergusson, D. M., Horwood, L. J., Ridder, E. M., & Beautrais, A. L. (2005). Subthreshold Depression in Adolescence and Mental Health Outcomes in Adulthood. *Archives of General Psychiatry, 62*(1), 66. https://doi.org/10.1001/archpsyc.62.1.66

Farrell, A. H., & Vaillancourt, T. (2019). Temperament, Bullying, and Dating Aggression: Longitudinal Associations for Adolescents in a Romantic Relationship. *Evolutionary Psychology*, *17*(2), 147470491984745. https://doi.org/10.1177/1474704919847450

Flett, G. L., Hewitt, P. L., Besser, A., Su, C., Vaillancourt, T., Boucher, D., … Gale, O. (2016). The Child–Adolescent Perfectionism Scale: Development, Psychometric Properties, and Associations With Stress, Distress, and Psychiatric Symptoms. *Journal of Psychoeducational Assessment, 34*(7), 634–652. https://doi.org/10.1177/0734282916651381

Flett, G., Hewitt, P. L., Boucher, D. J., Davidson, L. A., & Munro, Y. (2000). The Child-Adolescent Perfectionism Scale: Development, Validation, and Association with Adjustment. Unpublished manuscript.

Flett, G., Hewitt, P., & Davidson, L. (1990, June 1). Perfectionism and perceived competence in children. Ottawa.

Flett, G. L., Hewitt, P. L., Oliver, J. M., & Macdonald, S. (2002). Perfectionism in children and

their parents: A developmental analysis. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, research, and treatment.* (pp. 89–132). https://doi.org/10.1037/10458-004

Fontaine, S., & Vaillancourt, Tracy. (2017). Parent and Youth Discrepancy Ratings of Mental Health Symptoms in Adolescents: The Moderating Role of Family Functioning. *Université d'Ottawa / University of Ottawa*. https://doi.org/10.20381/ruor-20481

Fröjd, S. A., Nissinen, E. S., Pelkonen, M. U. I., Marttunen, M. J., Koivisto, A.-M., & Kaltiala-Heino, R. (2008). Depression and school performance in middle adolescent boys and girls. *Journal of Adolescence, 31*(4), 485–498. https://doi.org/10.1016/j.adolescence.2007.08.006

Fursland, A., Raykos, B., & Steele, A. (2009). Module 1: What is Perfectionism? In Perfectionism in Perspective (pp. 2–10). Perth: Centre for Clinical Interventions.

Gaudreau, P., Franche, V., & Gareau, A. (2016). A Latent Mediated Moderation of Perfectionism, Motivation, and Academic Satisfaction: Advancing the 2 × 2 Model of Perfectionism Through Substantive-Methodological Synergy. *Journal of Psychoeducational Assessment, 34*(7), 688–701. https://doi.org/10.1177/0734282916651778

Green, J. G., McLaughlin, K. A., Alegría, M., Costello, E. J., Gruber, M. J., Hoagwood, K., … Kessler, R. C. (2013). School Mental Health Resources and Adolescent Mental Health Service Use. *Journal of the American Academy of Child & Adolescent Psychiatry, 52*(5), 501–510. https://doi.org/10.1016/j.jaac.2013.03.002

Greenspon, T. S. (2014). Is there an antidote to perfectionism?: Perfectionism and Its Antidotes. *Psychology in the Schools, 51*(9), 986–998. https://doi.org/10.1002/pits.21797

Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. Psychology: A *Journal of Human Behaviour, 15*(1), 27–33.

Herman, K. C., Wang, K., Trotter, R., Reinke, W. M., & Ialongo, N. (2013). Developmental Trajectories of Maladaptive Perfectionism Among African American Adolescents. *Child Development, 84*(5), 1633–1650. https://doi.org/10.1111/cdev.12078

Hewitt, P. L., Caelian, C. F., Flett, G. L., Sherry, S. B., Collins, L., & Flynn, C. A. (2002).

Perfectionism in children: associations with depression, anxiety, and anger. *Personality and Individual Differences*, *32*(6), 1049–1061. https://doi.org/10.1016/S0191-8869(01)00109-X

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, *60*(3), 456–470. https://doi.org/10.1037/0022-3514.60.3.456

Hewitt, P. L., & Flett, G. L. (1993). Dimensions of perfectionism, daily stress, and depression: A test of the specific vulnerability hypothesis. *Journal of Abnormal Psychology*, *102*(1), 58–65. https://doi.org/10.1037/0021-843X.102.1.58

Hewitt, P. L., Flett, G. L., Ediger, E., Norton, G. R., & Flynn, C. A. (1998). Perfectionism in chronic and state symptoms of depression. *Canadian Journal of Behavioural Science / Revue Canadienne Des Sciences Du Comportement*, *30*(4), 234–242. https://doi.org/10.1037/h0087066

Hopcroft, R. L., & Bradley, D. B. (2007). The Sex Difference in Depression Across 29 Countries. *Social Forces*, *85*(4), 1483–1507. https://doi.org/10.1353/sof.2007.0071

Huggins, L., Davis, M. C., Rooney, R., & Kane, R. (2008). Socially Prescribed and Self-Oriented Perfectionism as Predictors of Depressive Diagnosis in Preadolescents. *Australian Journal of Guidance and Counselling*, *18*(02), 182–194. https://doi.org/10.1375/ajgc.18.2.182

Jacobs, R. H., Silva, S. G., Reinecke, M. A., Curry, J. F., Ginsburg, G. S., Kratochvil, C. J., & March, J. S. (2009). Dysfunctional Attitudes Scale Perfectionism: A Predictor and Partial Mediator of Acute Treatment Outcome among Clinically Depressed Adolescents. *Journal of Clinical Child & Adolescent Psychology*, *38*(6), 803–813. https://doi.org/10.1080/15374410903259031

Jahromi, F. G., Naziri, G., & Barzegar, M. (2012). The relationship between socially prescribed perfectionism and depression: The mediating role of maladaptive cognitive schemas. *Procedia - Social and Behavioural Sciences*, *32*, 141–147. https://doi.org/10.1016/j.sbspro.2012.01.023

Kljajic, K., Gaudreau, P., & Franche, V. (2017). An investigation of the 2 × 2 model of

perfectionism with burnout, engagement, self-regulation, and academic achievement. *Learning and Individual Differences*, *57*, 103–113. https://doi.org/10.1016/j.lindif.2017.06.004

Kline, R. B. (2015). *Principles and practice of structural equation modeling, fourth edition*. Retrieved from https://ebookcentral.proquest.com

Krygsman, A., & Vaillancourt, T. (2019). Peer victimization, aggression, and depression symptoms in preschoolers. *Early Childhood Research Quarterly*, *47*, 62–73. https://doi.org/10.1016/j.ecresq.2018.09.006

Kuncel, N. R., Credé, M., & Thomas, L. L. (2005). The validity of self-reported grade point averages, class ranks, and test scores: A meta-analysis and review of the literature. *Review of Educational Research*, *75*, 63–82.

Kutcher, S., & Venn, D. (2008). Why youth mental health is so important. *Medscape Journal of Medicine*, *10*(12), 275.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation Analysis. *Annual Review of Psychology*, *58*, 593. http://doi.org/10.1146/annurev.psych.58.110405.085542

Marshal, W. (1978). Puberty. In F. Falkner & J.Tanner (Eds.), *Human growth*, Vol. 2. New York: Plenum.

Masi, G., Sbrana, B., Poli, P., Tomaiuolo, F., Favilla, L., & Marcheschi, M. (2000). Depression and School Functioning in Non-Referred Adolescents: A Pilot Study. *Child Psychiatry & Human Development*, *30*(3), 161–171. https://doi.org/10.1023/A:1021395504617

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, *22*(03), 491–495. https://doi.org/10.1017/S0954579410000222

Mental Health Commission of Canada. (2013). Making the Case for Investing in Mental Health in Canada. Retrieved October 14, 2018, from https://www.mentalhealthcommission.ca/sites/default/files/2016-06/Investing_in_Mental_Health_FINAL_Version_ENG.pdf

Mossakowski, K. N. (2008). Is the duration of poverty and unemployment a risk factor for heavy drinking? *Social Science & Medicine*, *67*(6), 947–955. https://doi.org/10.1016/j.socscimed.2008.05.019

Larson, R., & Wilson, S. (2004). Adolescence across place and time: Globalization and the

changing pathways to adulthood. In R. Lerner and L. Steinberg Handbook of adolescent psychology. New York: Wiley

Lee, K. S., & Vaillancourt, T. (2018). Body mass index, peer victimization, and body dissatisfaction across 7 years of childhood and adolescence: Evidence of moderated and mediated pathways. *Developmental Science*, e12734. https://doi.org/10.1111/desc.12734

Leonard, N. R., Gwadz, M. V., Ritchie, A., Linick, J. L., Cleland, C. M., Elliott, L., & Grethel, M. (2015). A multi-method exploratory study of stress, coping, and substance use among high school youth in private schools. *Frontiers in Psychology, 6*. https://doi.org/10.3389/fpsyg.2015.01028

Neufeld, S. A. S., Dunn, V. J., Jones, P. B., Croudace, T. J., & Goodyer, I. M. (2017). Reduction in adolescent depression after contact with mental health services: A longitudinal cohort study in the UK. *The Lancet Psychiatry*, *4*(2), 120–127. https://doi.org/10.1016/S2215-0366(17)30002-0

O'Connor, R. C., Rasmussen, S., & Hawton, K. (2010). Predicting depression, anxiety and self-harm in adolescents: The role of perfectionism and acute life stress. *Behaviour Research and Therapy, 48*(1), 52–59. https://doi.org/10.1016/j.brat.2009.09.008

Orgiles, M., Gomez, M., Piqueras, J. A., & Espada, J. P. (2014). Relations between School Performance and Depressive Symptoms in Spanish Children. *Electronic Journal of Research in Educational Psychology*, *12*(2), 447–460.

Payne, G., & Payne, J. (2004). *Key Concepts in Social Research*. 1 Oliver's Yard, 55 City Road, London England EC1Y 1SP United Kingdom: SAGE Publications, Ltd. https://doi.org/10.4135/9781849209397

Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies, 47*(11), 1451–1458. https://doi.org/10.1016/j.ijnurstu.2010.06.004

Popper, K. R. (1959). *The Logic of Scientific Discovery*.

Quiroga, C. V., Janosz, M., Bisset, S., & Morin, A. J. S. (2013). Early adolescent depression symptoms and school dropout: Mediating processes involving self-reported academic competence and achievement. *Journal of Educational Psychology, 105*(2), 552–560. https://doi.org/10.1037/a0031524

Reilly, L. C., Ciesla, J. A., Felton, J. W., Weitlauf, A. S., & Anderson, N. L. (2012). Cognitive vulnerability to depression: A comparison of the weakest link, keystone and additive models. *Cognition & Emotion*, *26*(3), 521–533. https://doi.org/10.1080/02699931.2011.595776

Reynolds, C., & Kamphaus, R. (2004). *Behaviour assessment system for children - second edition manual.* Minneapolis, MN: Pearson.

Rogers, G. M., Park, J.-H., Essex, M. J., Klein, M. H., Silva, S. G., Hoyle, R. H., … March, J. S. (2009). The Dysfunctional Attitudes Scale: Psychometric Properties in Depressed Adolescents. *Journal of Clinical Child & Adolescent Psychology*, *38*(6), 781–789. https://doi.org/10.1080/15374410903259007

Rosen, M. L., Sheridan, M. A., Sambrook, K. A., Meltzoff, A. N., & McLaughlin, K. A. (2018). Socioeconomic disparities in academic achievement: A multi-modal investigation of neural mechanisms in children and adolescents. *NeuroImage*, *173*, 298–310. https://doi.org/10.1016/j.neuroimage.2018.02.043

Rutter, M. (2003). Poverty and Child Mental Health: Natural Experiments and Social Causation. *JAMA*, *290*(15), 2063. https://doi.org/10.1001/jama.290.15.2063

Schaffer, H. R. (2006). *Key concepts in developmental psychology*. London; Thousand Oaks, CA: Sage Publications.

Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: A cognitive–behavioural analysis. *Behaviour Research and Therapy*, *40*(7), 773–791. https://doi.org/10.1016/S0005-7967(01)00059-6

Shahar, G., Blatt, S. J., Zuroff, D. C., Kuperminc, G. P., & Leadbeater, B. J. (2004). Reciprocal Relations Between Depressive Symptoms and Self-Criticism (but Not Dependency) Among Early Adolescent Girls (but Not Boys). *Cognitive Therapy and Research*, *28*(1), 85–103. https://doi.org/10.1023/B:COTR.0000016932.82038.d0

Shahar, G., Henrich, C. C., Winokur, A., Blatt, S. J., Kuperminc, G. P., & Leadbeater, B. J. (2006). Self-criticism and depressive symptomatology interact to predict middle school academic achievement. *Journal of Clinical Psychology*, *62*(1), 147–155. https://doi.org/10.1002/jclp.20210

Sherry, S. B., Richards, J. E., Sherry, D. L., & Stewart, S. H. (2014). Self-critical perfectionism

is a vulnerability factor for depression but not anxiety: A 12-month, 3-wave longitudinal study. *Journal of Research in Personality, 52*, 1–5. https://doi.org/10.1016/j.jrp.2014.05.004

Sisk, C. L., & Foster, D. L. (2004). The neural basis of puberty and adolescence. *Nature Neuroscience*, *7*(10), 1040–1047. https://doi.org/10.1038/nn1326

Slade, P. D., & Owens, R. G. (1998). A Dual Process Model of Perfectionism Based on Reinforcement Theory. *Behaviour Modification, 22*(3), 372–390. https://doi.org/10.1177/01454455980223010

Son, S. E., & Kirchner, J. T. (2000). Depression in children and adolescents. *American Family Physician*, *62*(10), 2297–2308, 2311–2312.

Steinmayr, R., Meißner, A., Weidinger, A. F., & Wirthwein, L. (2014). Academic Achievement [Data set]. Oxford University Press. https://doi.org/10.1093/obo/9780199756810-0108

Stoeber, J., & Rambow, A. (2007). Perfectionism in adolescent school students: Relations with motivation, achievement, and well-being. *Personality and Individual Differences, 42*(7), 1379–1389. https://doi.org/10.1016/j.paid.2006.10.015

Stornelli, D., Flett, G. L., & Hewitt, P. L. (2009). Perfectionism, Achievement, and Affect in Children: A Comparison of Students From Gifted, Arts, and Regular Programs. Canadian *Journal of School Psychology*, *24*(4), 267–283. https://doi.org/10.1177/0829573509342392

Thapar, A., Collishaw, S., Pine, D. S., & Thapar, A. K. (2012). Depression in adolescence. *The Lancet*, *379*(9820), 1056–1067. https://doi.org/10.1016/S0140-6736(11)60871-4

Uzun Ozer, Bilge, O'Callaghan, Jean, Bokszczanin, Anna, Ederer, Elfriede, & Essau, Cecilia. (2014). Dynamic Interplay of Depression, Perfectionism and Self-Regulation on Procrastination. *British Journal of Guidance & Counselling, 42*(3), 309-319.

Vaillancourt, T., & Brittain, H. (2019). Longitudinal associations among primary and secondary psychopathic traits, anxiety, and borderline personality disorder features across adolescence. *Personality Disorders: Theory, Research, and Treatment*, *10*(4), 354–364. https://doi.org/10.1037/per0000325

Vaillancourt, T., & Haltigan, J. D. (2018). Joint trajectories of depression and perfectionism across adolescence and childhood risk factors. *Development and Psychopathology, 30*(02), 461–477. https://doi.org/10.1017/S0954579417000979

Vaillancourt, T., Brittain, H. L., McDougall, P., & Duku, E. (2013). Longitudinal Links Between Childhood Peer Victimization, Internalizing and Externalizing Problems, and Academic Functioning: Developmental Cascades. *Journal of Abnormal Child Psychology*, *41*(8), 1203–1215. https://doi.org/10.1007/s10802-013-9781-5

van den Bos, E., van Duijvenvoorde, A. C. K., & Westenberg, P. M. (2016). Effects of adolescent sociocognitive development on the cortisol response to social evaluation. *Developmental Psychology*, *52*(7), 1151–1163. https://doi.org/10.1037/dev0000133

Verhulst, F. C., & Ende, J. (1992). Agreement Between Parents' Reports and Adolescents' Self-reports of Problem Behaviour. *Journal of Child Psychology and Psychiatry*, *33*(6), 1011–1023. https://doi.org/10.1111/j.1469-7610.1992.tb00922.x

Verner-Filion, J., & Gaudreau, P. (2010). From perfectionism to academic adjustment: The mediating role of achievement goals. *Personality and Individual Differences, 49*(3), 181–186. https://doi.org/10.1016/j.paid.2010.03.029

Watson, R. (2015). Quantitative research. *Nursing Standard*, *29*(31), 44–48. https://doi.org/10.7748/ns.29.31.44.e8681

Weissman, Arlene N. & Beck, Aaron T. (1978). *Development and Validation of the Dysfunctional Attitude Scale A Preliminary Investigation*. [Washington, D.C.]]: Distributed by ERIC Clearinghouse, https://eric.ed.gov/?id=ED167619

Wichstrøm, L., Belsky, J., & Steinsbekk, S. (2017). Homotypic and heterotypic continuity of symptoms of psychiatric disorders from age 4 to 10 years: A dynamic panel model. *Journal of Child Psychology and Psychiatry*, *58*(11), 1239–1247. https://doi.org/10.1111/jcpp.12754

Table 1

Descriptive Statistics for Study Variables

	Possible Range		Total	
	Min	Max	*M*	*SD*
Self-Oriented Perfectionism				
Grade 9	0.17	4	2.02	0.82
Grade 10	0.08	4	2.06	0.83
Grade 11	0.08	4	2.08	0.89
Grade 12	0.17	4	2.05	0.82
Socially Prescribed Perfectionism				
Grade 9	0	3.9	1.39	0.89
Grade 10	0	3.9	1.53	0.92
Grade 11	0	3.9	1.49	0.91
Grade 12	0	4	1.46	0.90
Depression				
Grade 9	0	27	4.44	5.69
Grade 10	0	28	5.17	6.01
Grade 11	0	27	5.09	5.67
Grade 12	0	24	5.21	5.41
GPA				
Grade 9	35	97.38	77.86	10.41
Grade 10	30	97.38	77.46	11.62
Grade 11	22.71	97.86	75.90	12.80
Grade 12	30	98.29	77.50	12.77

Table 2

Bivariate Correlations Among Self-Oriented Perfectionism, Socially Prescribed Perfectionism, Depression Symptoms, and GPA

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SOP																
1. Gr.9	-	.69**	.66**	.55**	.50**	.36**	.37**	.36**	.11*	.06	.03	.07	.36**	.30**	.25**	.21**
2. Gr. 10		-	.75**	.67**	.36**	.50**	.40**	.44**	.01	.01*	.05	.08	.34**	.33**	.27**	.17**
3. Gr. 11			-	.80**	.35**	.44**	.54**	.49**	.01	.10	.09	.11*	.37**	.38**	.35**	.23**
4. Gr.12				-	.32**	.41**	.45**	.55**	.07	.15**	.12*	.16**	.32**	.33**	.31**	.23**
SPP																
5. Gr.9					-	.61**	.57**	.55**	.35**	.27**	.23**	.28**	.04	.03	.03	.08
6. Gr. 10						-	.71**	.65**	.18**	.37**	.28**	.35**	.03	.02	.01	-.02
7. Gr. 11							-	.70**	.20**	.26**	.37**	.32**	.10*	.10*	.07	.04
8. Gr.12								-	.16**	.24**	.24**	.42**	.13**	.10*	.06	.03
DEP																
9. Gr.9									-	.64**	.52**	.47**	-.17**	-.20**	-.18**	-.07
10. Gr. 10										-	.65**	.51**	-.19**	-.20**	-.18**	-.09
11. Gr. 11											-	.59**	-.17**	-.18**	-.16**	-.10
12. Gr.12												-	-.16**	-.18**	-.15**	-.17**
GPA																
13. Gr.9													-	.87**	.80**	.72**
14. Gr. 10														-	.83**	.73**
15. Gr. 11															-	.81**
16. Gr.12																-

Note. SOP=Self-Oriented Perfectionism; SPP=Socially Prescribed Perfectionism; DEP=Depression; GPA=Grade Point Average. *$p < 0.05$. **$p < 0.01$.

Table 3

Model Fit Statistics

	x^2	*df*	*p*	RMSEA (90% CI)	SRMR	CFI	TLI	AIC
Model 1: Within-time covariances	4114.766	96	0.000	0.259 (0.252-0.265) p = 0.000	0.328	0.220	0.024	35406.590
Model 2: Within-time covariances and across-time stability	346.449	84	0.000	0.071 (0.063-0.078) p = 0.000	0.092	0.946	0.927	31662.275
Model 3: Within-time covariances, across-time stability, and cross-lagged SOP, SPP, DEP, and GPA	239.228	48	0.000	0.080 (0.070-0.090) p = 0.000	0.044	0.961	0.907	31627.055
Model 4: Within-time covariances, across-time stability, cross-lags, and two-year stability	76.839	40	0.000	0.038 (0.025-0.051) p = 0.931	0.017	0.992	0.978	31480.665
Model 5: Within-time covariances, across-time stability, cross-lags, two-year stability, and controls	122.477	89	0.011	0.025 (0.012-0.035) p = 1	0.026	0.994	0.987	36857.984

Note. SOP=Self-Oriented Perfectionism; SPP=Socially Prescribed Perfectionism; DEP=Depression; GPA=Grade Point Average.

Figure 1

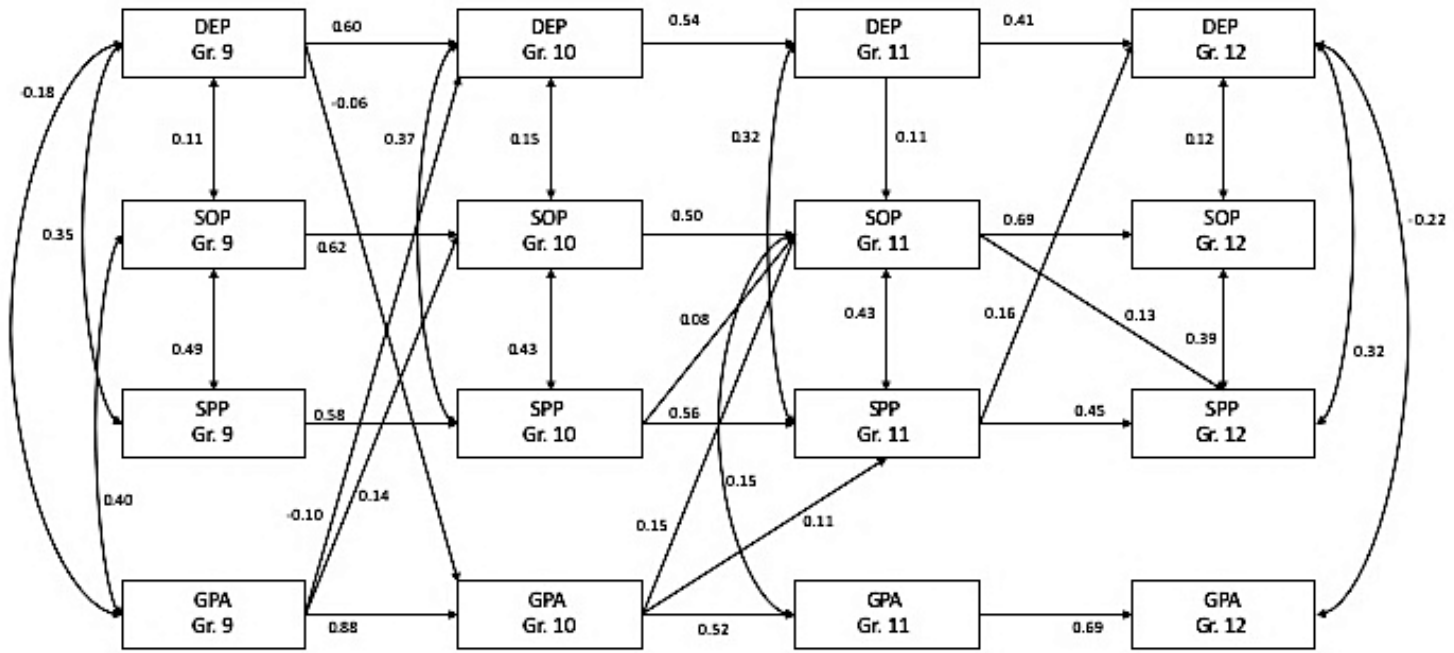

Figure 1. Model of Depression symptoms, Self-Oriented Perfectionism, and Socially Prescribed Perfectionism from Grade 9 to 12. *Note.* Values represent standardized coefficients or correlations. Only coefficients which are statistically significant at the $p < 0.05$ level are presented. Non-significant parameters, control variables, and stability paths across two years are not displayed for ease of presentation.