

EXPLORING THE MODERATING EFFECT OF COGNITIVE AUTONOMY ON THE  
RELATIONSHIP BETWEEN COGNITIVE DISTORTIONS AND YOUTH'S  
EXTERNALIZING BEHAVIORS

by

Liam J. Fischback

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

of

MASTER OF SCIENCE

in

Human Development

Approved:

---

Shawn D. Whiteman, Ph.D.  
Major Professor

---

Travis Dorsch, Ph.D.  
Committee Member

---

Lisa Boyce, Ph.D.  
Committee Member

---

Laurens H. Smith, Ph.D.  
Vice President for Research and  
Dean of the School of Graduate

Studies

UTAH STATE UNIVERSITY  
Logan, Utah

2018

Copyright © Liam Fischback 2018

All Rights Reserved

## ABSTRACT

Exploring the Moderating Effect of Cognitive Autonomy on the  
Relationship Between Cognitive Distortions and  
Youth's Externalizing Behaviors

by

Liam Fischback, Master of Science

Utah State University, 2018

Major Professor: Dr. Shawn D. Whiteman  
Department: Human Development and Family Studies

Studies have linked cognitive distortions to youth's externalizing behaviors during adolescence. In recent years, it has been suggested that higher levels of cognitive autonomy, which develops during adolescence, may be a protective factor for youth's adjustment. To date, studies have failed to integrate how these two cognitive processes operate and relate to adolescents' adjustment. The purpose of this study was to determine if cognitive autonomy moderated the relationship between cognitive distortions and externalizing behaviors in a clinical population of adolescents. As cognitive distortions have been found to be greater and more prevalent in clinical populations, it was hypothesized that cognitive autonomy could be contaminated by cognitive distortions and could exacerbate the relationship between cognitive distortions and externalizing behaviors. Data from 146 adolescents, collected as part of an on-going internal assessment from a residential treatment facility, were included in this study. Hierarchical

multiple regression analyses were used to examine if links between cognitive distortions, cognitive autonomy, and externalizing behaviors existed, and to determine if components of cognitive autonomy moderated the link between cognitive distortions and externalizing behaviors. Consistent with expectations, analyses revealed significant relationships between cognitive distortions and externalizing behaviors. Inconsistent with expectations, aspects of cognitive autonomy were negatively linked to externalizing behaviors. Specifically, evaluative thinking and decision-making were negatively associated with externalizing behaviors. Furthermore, neither dimension of cognitive autonomy was found to moderate the relationship between cognitive distortions and externalizing behaviors. Discussion highlights potential reasons and alternative explanations for the results that were inconsistent with expectations. Limitations and future directions also are discussed.

(87 pages)

## PUBLIC ABSTRACT

### Exploring the Moderating Effect of Cognitive Autonomy on the Relationship Between Cognitive Distortions and Youth's Externalizing Behaviors

Liam Fischback, Master of Science

Scholars have connected cognitive distortions to adolescents' externalizing behaviors. Other scholars have offered that higher levels of cognitive autonomy, which develops during adolescence, may be a protective factor for problem behaviors in adolescence. To date, no studies have explored how these two cognitive processes function and potentially interact to predict adolescent problem behaviors. This study's purpose was to see if cognitive autonomy affected the relationship between cognitive distortions and externalizing behaviors in a clinical population of adolescents. Past research has suggested that cognitive distortions are greater and more prevalent in clinical populations. Because of this, the processes of cognitive autonomy could be affected by cognitive distortions (that can form prior to adolescence), and worsen the relationship between cognitive distortions and externalizing behaviors. This study analyzed 146 adolescents, from a residential treatment facility. Hierarchical multiple regression analyses were used to examine if links between cognitive distortions, cognitive autonomy, and externalizing behaviors existed, and to determine if elements of cognitive autonomy affected the relationship between cognitive distortions and externalizing behaviors. As expected, analyses showed that cognitive distortions and externalizing behaviors were related. Additionally, results indicated that aspects of cognitive autonomy

were protective of externalizing behaviors. Results did not reveal that cognitive autonomy affected the relationship between cognitive distortions and externalizing behaviors. Discussion highlights potential reasons and alternative explanations for the results that were inconsistent with expectations. Limitations and future directions also are discussed.

## ACKNOWLEDGMENTS

I would like to thank my wife and children for their moral support and for being the motivation for finishing this project. I would especially like to thank my advisor, Dr. Shawn Whiteman, for his invaluable support throughout the writing process. Additional thanks go to my wonderful committee members, Drs. Lisa Boyce and Travis Dorsch, for their support throughout this process.

Liam Fischback

## CONTENTS

	Page
ABSTRACT .....	iii
PUBLIC ABSTRACT .....	v
ACKNOWLEDGMENTS .....	vii
LIST OF TABLES .....	x
INTRODUCTION .....	1
Theoretical Framework .....	2
The Development of Moral Action and Thought: A Social Cognitive Perspective .....	2
LITERATURE REVIEW .....	4
Types of Problem Behaviors .....	4
Externalizing Behaviors .....	6
Forms of Aggression .....	7
Functions of Aggression .....	16
Cognitive Distortions .....	19
Autonomy .....	23
Cognitive Autonomy .....	25
Cognitive Autonomy in Clinical Populations .....	27
The Present Study .....	29
METHODS .....	30
Participants .....	30
Procedures .....	31
Measures .....	31
Externalizing Behaviors .....	31
Cognitive Distortions .....	32
Cognitive Autonomy .....	33
RESULTS .....	35

DISCUSSION .....	46
Cognitive Distortions .....	47
Interplay of Cognitive Autonomy and Cognitive Distortions.....	49
Limitations and Future Directions .....	51
REFERENCES .....	55
APPENDIX.....	77

## LIST OF TABLES

Table	Page
1	Means, Standard Deviations, Skewness, and Kurtosis .....37
2	Hierarchical Linear Regression of Self-Centered Thoughts and Evaluative Thinking Predicting Externalizing Behaviors.....39
3	Hierarchical Linear Regression of Blaming Others and Evaluative Thinking Predicting Externalizing Behaviors.....40
4	Hierarchical Linear Regression of Minimizing/Mislabeling Blame and Evaluative Thinking Predicting Externalizing Behaviors.....41
5	Hierarchical Linear Regression of Assuming the Worst and Evaluative Thinking Predicting Externalizing Behaviors .....42
6	Hierarchical Linear Regression of Self-Centered Thoughts and Decision-Making Predicting Externalizing Behaviors.....43
7	Hierarchical Linear Regression of Blaming Others and Decision-Making Externalizing Behaviors .....44
8	Hierarchical Linear Regression of Minimizing/Mislabeling Blame and Decision-Making Predicting Externalizing Behaviors.....45
9	Hierarchical Linear Regression of Assuming the Worst and Decision-Making Predicting Externalizing Behaviors.....46

## INTRODUCTION

Why do some individuals engage in antisocial behaviors while others do not? Social-cognitive theory posits that individuals' behaviors are based upon their interpretation of social circumstances, and that engaging in problem behaviors are often the result of inadequacies in interpretation of these events (Nas, Brugman, & Koops, 2008). Cognitive distortions are inaccurate or biased ways of attending to or conferring meaning upon experiences (Barriga & Gibbs, 1996). Cognitive distortions allow individuals to neutralize guilt and empathy associated with antisocial behaviors, and serve as rationalizations to protect self-perception while individuals take part in problem behaviors (Bandura, 1991; Barriga, Gibbs, Potter, & Liao, 2001; Barriga, Landau, Stinson II, Liao, & Gibbs, 2000). Self-serving cognitive distortions, specifically, have been positively associated with individuals engaging in externalizing behaviors (Barriga, Gibbs, et al., 2001).

Externalizing practices among children and adolescents have been associated with greater rates, severity, constancy, and range of problem behaviors (Chabrol, Goutaudier, Melioli, van Leeuwen, & Gibbs, 2014). Researchers have illustrated that individuals engaging in externalizing behaviors are also at higher risk for other psychopathologies such as of lack of remorse, egocentrism, impulsiveness, abrasive treatment of others, and callousness (Chabrol et al., 2014). The correlations between cognitive distortions and externalizing behaviors have been well documented (Barriga & Gibbs, 1996; van Leeuwen, Rodgers, Gibbs, & Chabrol, 2014), but examining how cognitive development impacts these associations has been neglected.

Adolescence is a time when individuals become more independent. During adolescence individuals learn how to act, feel, and think more autonomously. The constructs of behavioral and emotional autonomy have been researched quite heavily, whereas cognitive autonomy has received much less scholarly attention. Due to the cerebral nature of cognitive autonomy, it may influence the aforementioned association between cognitive distortions and externalizing behaviors. To date, however, the moderating effect of cognitive autonomy on the relationship between cognitive distortions and externalizing behaviors in clinical populations has yet to be examined. The present study addresses this gap and may be important as it may help researchers and clinicians to understand the relationships between these underlying cognitive constructs and externalizing behaviors.

### **Theoretical Framework**

#### **The Development of Moral Action and Thought: A Social Cognitive Perspective**

Social cognitive theory posits that individuals learn through direct interaction with the environment and their observation of others' interactions with their environments (i.e., modeling; Bandura, 1989). The learning of social values underlying acceptable behaviors is a gradual process that starts with basics and develops over time. Due to lack of experience, little is expected of young children; correspondingly, very few social rules of conduct are enforced. As children mature cognitively and have more experience interacting with family members and peers, more appropriate social behaviors are expected (Bandura, 1991). Adults teach children socially appropriate strategies to replace inappropriate behaviors. For example, adults teach children to ask for things instead of cry so that children's needs are fulfilled. Likewise, adults may also teach

children to use words instead of hitting. As adults teach children about these social rules of conduct, children grow and develop their understanding of these rules (Bradley, 2007; Eisenberg, Cumberland, & Spinrad, 1998; Morris, Silk, Steinberg, Myers, & Robinson, 2007). In early childhood, children are unlikely to grasp the moral foundations of such rules; but as children's social proficiency and experience develops, these moral underpinnings are more easily comprehended and appreciated. Appropriately, as children mature, physical penalties for misconduct are replaced with social ones (Bandura, 1991).

Learning social rules of conduct is important as a child; however, the understanding and adoption of moral standards allows for the construction of personal morals, which are vital as individuals grow and develop. Personal morals facilitate moral reasoning as they provide a basis for individuals to self-evaluate behaviors and their associated consequences. This moral reasoning, or evaluating, develops along with individuals' understanding of rules of conduct and the values associated with them (Bandura, 1991). For example, at first a child may know the rule that is wrong to steal. An adolescent may know the same rule but also understand that stealing is wrong, not just because it is illegal or they were told so, but because stealing is a violation of trust; both may choose to steal or not to, but the underlying cognitive processes will be different. When faced with a moral dilemma, individuals exercise moral reasoning through the use of "moral judgment of the rightness or wrongness of conduct evaluated against personal standards and situational circumstances, and self-sanctions" (Bandura, 2001, p. 8). In short, the behavior that individuals exhibit is result of this deliberative process.

Social cognitive theory maintains that individuals want to feel good about themselves. If this is so then why do people choose to engage in antisocial behaviors, and how can they justify their actions? Individuals that engage in antisocial behaviors to justify their actions, before or after the fact, by utilizing “mechanisms of moral disengagement.” Mechanisms of moral disengagement protect one’s self-image through rationalizations and/or distortions of events that allows externalizing behaviors to be detached from self-evaluation. These mechanisms distort how events are perceived, allowing individuals to engage in antisocial behaviors with little to no remorse (Bandura, 1991). Social cognitive theory takes into account that when making moral decisions individuals must live with the consequences of their decisions. However, when mechanisms of moral disengagement are used, individuals may not be accurately viewing situations or their consequences (Bandura, 2001). These inaccurate assessments will be discussed later. In the meantime, this thesis will focus on the resultant behavior of the inaccurate assessments.

## LITERATURE REVIEW

### **Types of Problem Behaviors**

Within the field of psychology, the distinction between internalizing and externalizing behaviors has been well established (Achenbach, 1998; Achenbach & Edelbrock, 1978). Externalizing behaviors are defined as a group of behaviors that are targeted toward individuals’ external environments. Behaviors in this cluster violate central social or moral rules that either directly, or indirectly, harm others and/or themselves (Barriga, Gibbs, et al., 2001; Nas et al., 2008; ten Cate, 2011). Instead of healthy responses to stress and negative emotions, individuals exhibiting externalizing

behaviors direct feelings outwardly toward people and things (Achenbach, 1991a; Liu, 2004). The externalizing construct includes disorders such as: oppositional defiance disorder (ODD), conduct disorder (CD), attention-deficit/hyperactivity disorder (ADHD), externalizing personality disorder (ASPD), substance use disorders, intermittent explosive disorder (IED), kleptomania and pyromania (American Psychological Association, 2013). Externalizing problems in adolescence have been shown to be strongly associated with adjustment problems in adulthood (e.g., criminal activity, substance abuse) (Crick, Ostrov, & Werner, 2006; Mathieson & Crick, 2010). While the term externalizing is often used synonymously with antisocial by many researchers, the antisocial construct is also reserved by some researchers to reference more severe behaviors (Liu, 2004). Owing to this distinction and the foci of this thesis, the term externalizing behaviors will be employed.

Internalizing types of behaviors (e.g., anxiety, inhibition, depression, and withdrawal) are directed inward and primarily affect the individual's psyche, producing a negative self-image (Achenbach, 1991a; Edidin, 2010; Liu, 2004). By their very nature, internalizing behaviors affect others indirectly, and are not as easily observable as externalizing behaviors (McConaughy, 1993; Sander, DeBoth, & Ollendick, 2015). Major depressive disorder, dysthymic disorder, obsessive compulsive disorder (OCD), posttraumatic stress disorder (PTSD), acute stress disorder, social phobia, generalized anxiety disorder, anorexia, and bulimia nervosa are contained within the internalizing construct. Similar to externalizing behaviors, internalizing problem behaviors in adolescence are likely to persist into adulthood (Achenbach, Dumenci, & Rescorla, 2002; Capaldi & Stollmiller, 1999).

Externalizing and internalizing behaviors have been shown to be highly comorbid (Achenbach & Rescorla, 2001a; Capaldi & Stollmiller, 1999; Drabick, Beauchaine, Gadow, Carlson, & Bromet, 2006; Kim et al., 2003; Liu, 2004). While the distinction between externalizing and internalizing behaviors is useful, the division between these two types of behaviors is not perfect. Externalizing problems (e.g., conduct disorder) may negatively affect the adolescent psyche as well the external domain. Likewise, adolescent internalizing behaviors (e.g., depression) has the potential to harm family, friends, and teachers in the external world. Nonetheless, the present research focuses on youth's participation and engagement in externalizing behaviors.

### **Externalizing Behaviors**

As externalizing behaviors is a broad umbrella concept, the construct has been divided into different dimensions. For example, factor analyses have identified two major types of externalizing behaviors: delinquent behaviors (e.g., lying, stealing, kleptomania, and other illegal and immoral behaviors) and aggressive behaviors (e.g., fighting, screaming, ODD, CD, ADHD). Delinquency generally refers to immoral actions or acts that disregard social norms (Barriga, Morrison, Liau, & Gibbs, 2001; Nas et al., 2008). It is understandable that when many reflect on the term "delinquent," the phrase and definition of "juvenile delinquency" is often interwoven (Liu, 2004). The term "juvenile delinquency" focuses on youth's engagement in illegal activities, whereas delinquency is a more comprehensive concept that includes both illegal and legal actions that violate the underpinnings of social or moral systems. As physical forms of aggression are viewed as a separate dimension, the term delinquency will be used to reference non-violent behaviors that disregard social and moral norms (e.g., cheating, stealing, and lying). This

distinction is important owing to the fact that many delinquent acts are inherently non-aggressive (e.g., lying, stealing, cheating), just as many aggressive acts do not infringe on social or moral standards (e.g., teasing, eye-rolling). Unlike aggressive forms of externalizing behaviors, most delinquent acts go undetected except by perpetrators, and are therefore underreported. Although delinquency and aggression have been shown to be highly comorbid (Crick et al., 2006; Liu, 2004), this study will focus on aggressive behaviors.

Aggressive behaviors are complex. In order to differentiate aggressive behaviors, scholars have further distinguished these behaviors by their form and function. Teasing, hitting, physical intimidation, and gossiping are all forms of aggressive behaviors that are different in nature. Hitting another person is a very simple and direct form of aggression; alternatively, teasing may be done face to face, behind someone's back, or even online and is indirect and not as easy to detect (Goldstein, 2016; Lafko, 2015; Moore, Nakano, Enomoto, & Suda, 2012). Addressing this dissimilarity, empirical researchers have provided a clearer distinction by bisecting forms of aggression into the categories of physical and relational aggression (Dodge & Coie, 1987).

### **Forms of Aggression**

**Physical aggression.** Physical forms of aggression are overt and use physical injury, or the threat of physical damage (i.e., intimidation), as the method of inflicting harm on others (Crick et al., 2006; Heilbron & Prinstein, 2008; Murray-Close & Ostrov, 2009; ten Cate, 2011). Physical forms of aggression are easily identifiable and bring to mind the archetypical "high school bully." Longitudinal studies investigating the development of physical aggression have demonstrated that physical aggression changes

across the lifespan and differs by gender. Findings from multiple longitudinal studies reveal heterogeneity in the development of physical aggression from early-childhood to pre-adolescence (Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Tremblay et al., 2004).

Focusing on early childhood, Tremblay and colleagues (2004) examined the development of physical aggression of children from 17 to 42 months of age ( $n = 546$ ). They identified two normative developmental trajectories of physical aggression, which captured about 86% of the population. The first group (about 28%) exhibited little to no physical aggression, and the second group (about 58%) followed a trajectory of modest aggression that increased over time. At the last assessment these children were 42 months old (3½ years old), at this age interaction with others and understanding of social mores may be limited by parents. This lack of interaction and understanding of social norms could account for this second group's rising trajectory at this early age and conforms to social cognitive theory.

Tremblay and colleagues (2004) also identified a third group (about 14%) that conformed to an abnormal trajectory of high use of physical aggression that increased over time and noted that boys were more likely to engage in physically aggressive behaviors than girls. Similar findings have been produced in other longitudinal studies (Archer & Côté, 2005; Côté et al., 2006) with reference to various developmental stages, indicating that males engage in physical aggression more frequently than females. Researchers reported that family dysfunction, poverty, and coercive parenting were strong predictors of high use of physical aggression in children in this abnormal group, which adds validity to findings from other studies (Baillargeon et al., 2007; Broidy et al.,

2003; Côté, 2007; Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007). Consistent with the tenets of social cognitive theory, these findings suggest that even at early ages children may observe and learn aggressive behaviors modeled by parents.

Even though both the normal and abnormal trajectories of physical aggression increased with age during early childhood, researchers examining the developmental trajectories of physical aggression from early childhood to pre-adolescence show that use of physical aggression generally declines as children transition into middle childhood and early adolescence. For example, Côté and colleagues (2006) examined the developmental patterns of physical aggression from early childhood to pre-adolescence in a six-year longitudinal study of Canadian youth. Findings from a representative sample of ten cohorts of children (each about 1,000 children) between the ages of 2-11, revealed two normative trajectories. The first of these two groups (31.1%) conformed to a trajectory consisting of occasional use of physical aggression in early childhood dwindling to almost no use of physical aggression at 11 years of age. The second group (52.2%) followed a trajectory of moderate-sporadic use of physical aggression in early childhood also declining in use as youth aged, exhibiting low and infrequent use of physical aggression at 11 years of age. Researchers also reported that mean scores for physical aggression were lower for females than males (Côté et al., 2006). The two normative groups in this study differed from those found in the study conducted by Tremblay and associates (2004) in that both groups followed decreasing trajectories of physical aggression as age increased (about 83%; Côté et al., 2006). Social cognitive theory suggests that this normative trajectory of decreasing physical aggression is due to children's growing social interaction, which leads to greater exposure and grasp of social

standards concerning physical aggression. Correspondingly, as children's understanding of societal norms develops, social standards are gradually enforced, resulting in diminishing social tolerance of physical aggression as children develop. As youth become more aware of the social rules and disapproval associated with physical aggression, use of physical aggression naturally decreases.

Yet, Côté and colleagues (2006) also identified an abnormal trajectory -- a physical aggression group. About one sixth (16.6%) of the population exhibited high use of physical aggression in early childhood and maintained high levels of physical aggression into pre-adolescence. Similar to the abnormal group found by Tremblay and colleagues (2004), the majority of the children in the abnormal group were from low-income and/or single parent homes (Côté et al., 2006). Mothers of children following this abnormal trajectory also reported the consistent use of ineffective and hostile parenting techniques. Such parenting practices have been highly correlated with high levels of aggression in early childhood (Holmes, Yoon, & Berg, 2017), which could be learned through modeling, experience, observation of hostile parenting techniques of parents or partners, or lack of modeling of socially appropriate strategies. The abnormal trajectory group also consisted mostly of boys -- almost double the amount of girls -- providing further support to the claim that males are more likely to engage in physical aggression than females.

Additional research provides evidence of gender differences in the pre-adolescent model of physical aggression. Broidy and colleagues (2003) investigated the development of physical aggression from childhood (age 6) to mid-adolescence (age 15) at six different sites across three countries (Broidy et al., 2003) and found that boys

exhibited higher levels of physical aggression than girls at all sites. Additionally, they concluded that boys with high levels of pre-adolescent physical aggression were at increased risk for high levels of use of physical aggression in adolescence, but not girls. As physical aggression is generally higher for males, it could be that males' observation and modeling of peers helps to sustain a greater within-group tolerance of physical aggression.

Together the findings from these studies, as well as others (Broidy et al., 2003; Cleverley, Szatmari, Vaillancourt, Boyle, & Lipman, 2012; Di Giunta et al., 2010), indicates that youth's use of physical aggression typically follows one of two normative trends of development or an abnormal trend. From early-life to pre-adolescence the majority of youth (about 85%) appear to engage in low to moderate levels of physical aggression. During this timeframe, a normative developmental trend of physical aggression also emerges, in that most physical aggression declines as youth approach pre-adolescence. The amalgam of findings also draws attention to an abnormal developmental trend of physical aggression. This more severe group (potentially clinical populations) exhibited high levels of physical aggression in early childhood and maintained high levels of aggression into pre-adolescence. Additionally, results from these studies highlight differences in use of physical aggression with respect to gender, as well as correlations between high levels of physical aggression, parenting styles, and home life situations.

With regard to summation of findings of these studies, it is important to bear in mind that this research on the development of physical aggression largely did not include the next developmental period in which youths' bodies and minds mature considerably,

adolescence. Researchers focusing on the development of aggression during adolescence have shown that the normative and abnormal trajectories of the pre-adolescent model change. Brame, Nagin, and Tremblay (2001), for example, conducted a longitudinal study tracking use of physical aggression from age 6 to 17 ( $n = 1,161$ ). In their first analysis, Brame and colleagues divided the data into the categories of childhood to pre-adolescence and adolescence. From this first analysis they identified three childhood to pre-adolescence trajectories similar to other studies (Cleverley et al., 2012; Côté et al., 2006; Di Giunta et al., 2010) and four additional adolescent trajectories. When combined in a joint analysis, seven distinct childhood to late adolescent trajectories emerged. Though the majority of these trajectories appear to be a breakdown dissection of the pre-adolescent model continuing into adolescence, most trajectories showed changes in adolescence. Three of the groups identified displayed trajectories that were unexpected. The first of these groups (13%) displayed declining low-aggression through the childhood and pre-adolescent years but exhibited mild increases in physical aggression in adolescence. (This trajectory is inconsistent with the pre-adolescent model, in which one would hypothesize that this group would maintain or continue to decline in the use of physical aggression in adolescence.)

The second and third groups identified in Brame and associates (2001) analysis, were the two groups that displayed high levels of physical aggression in childhood through preadolescence. Both of these groups did not conform well to the preadolescent trajectories in adolescence in three ways. First, both of these highly aggressive groups exhibited trajectories of high physical aggression that declined to almost moderate levels of aggression, while the pre-adolescent model posits high and maintained levels into

preadolescence. The second group (which was highly aggressive; 10%), displayed higher levels of physical aggression before adolescence. According to the preadolescent trajectory model, steady levels of aggression should have been observed; however, a significant decrease in physical aggression occurred during adolescence. Last, the most aggressive group (3%) exhibited an upsurge in physical aggression that peaked around age 15 and then declined to the age of 17. In keeping with the pre-adolescent trajectory model, one would posit that this group would be more likely to have lower levels of aggression throughout adolescence, yet a very different pattern emerged. A number of researchers have shown that this upsurge of physical aggression is fairly consistent for a small portion of the population (Broidy et al., 2003; Jennings & Reingle, 2012; Moffitt, 2007). While evidence demonstrates changes in use of physical aggression in adolescence, why these changes occur is still unclear. One possible explanation is that these adolescents may employ mechanisms of moral disengagement (i.e., blaming others, minimizing/mislabeling), allowing for externalizing behaviors to be excluded from self-evaluation. Researchers focusing on adolescence highlight the fact that trajectory analysis of physical aggression ending in pre/early adolescence is shortsighted and lacks acknowledgement of important developmental changes and shifts that occur throughout adolescence (Broidy et al., 2003; Jennings & Reingle, 2012; Moffitt, 2003).

**Relational Aggression.** Relational (i.e., social or indirect) forms of aggression can be overt, yet perpetrators often employ covert approaches with the intent to cause interpersonal or social harm to others. Examples of relational aggression include eye-rolling, gossiping, threats to end friendship, social exclusion, damaging relationships or feelings of group acceptance, and spreading false rumors (Crick et al., 2006; Heilbron &

Prinstein, 2008; ten Cate, 2011). Although relational forms of aggression share many similar outcomes with physical aggression, relational aggression perpetration and victimization have also been uniquely linked to youth's individual and relational adjustment (ten Cate, 2011). Several studies have found that relationally aggressive behaviors are positively correlated with withdrawal, depression, peer rejection, difficulties with friendships, and anxiety (Crick & Dodge, 1996; Crick, Grotpeter, & Bigbee, 2002; Grotpeter & Crick, 1996). For example, in a year-long study of 3<sup>rd</sup> graders ( $n = 224$ ), Crick and colleagues (2006) found that the use of relational aggression was associated with higher risk for peer rejection, friendship difficulties, and internalizing problems (e.g., withdrawal, depression, anxiety). Additionally, individuals that engaged in relational methods of aggression were more likely than non-relationally aggressive individuals to engage in aggressive and delinquent behaviors.

Due to the less conspicuous nature of relational aggression than physical forms, relational aggression is less detectable by others, especially adults and teachers. As a result, individuals' use of relational aggression could result in less social censure and more reinforcement of socially aggressive behaviors. Yet it seems relational aggression is detectable by peers, as evidenced by the positive associations between relational aggression, peer rejection, and friendship difficulties (Crick et al., 2006). Perhaps, when relationally aggressive individuals attempt to build friendships, these socially aggressive strategies become apparent to the perspective friend and result in peer resentment and/or friendship difficulties.

As discussed previously, it has been hypothesized that some youth may exchange physical forms of aggression for relational forms as they mature (Côté et al., 2007;

Heilbron & Prinstein, 2008). Youth that opt for using covert forms of aggression in place of overt aggression may not conform to the normative development of declining aggression (Côté et al., 2006, 2007). In a longitudinal study examining the development of relational aggression from ages 2 to 10 ( $n = 1,401$ ), researchers found that the majority of youth (~70%) exhibited a low level use of relational aggression in childhood and that low use persisted into pre-adolescence (Côté et al., 2007; Vaillancourt, Miller, Fagbemi, Côté, & Tremblay, 2007). However, the other subset, about 30% mostly consisting of females, showed more modest decreases in use of physical aggression over time with related increases in relational aggression (Côté et al., 2007; Vaillancourt et al., 2007). Identification of these subgroups is important, as the developmental patterns may differ as a function of severity of behavior and gender. Authors concluded that abnormal development of aggression in males was indicative of higher levels of physical aggression and that abnormal development for females was associated with high levels of relational aggression (Côté et al., 2007; Vaillancourt et al., 2007).

The continued practice and reinforcement of high levels of relational aggression could help to explain why relationally aggressive individuals are more likely to engage in externalizing behaviors (Crick et al., 2006). In line with previous findings that aggressive behaviors may be learned at home, relational aggression may also be learned from peers. In fact, studies indicate that youth learn aggressive behaviors from peers, especially in adolescence (Prinstein & Cillessen, 2003). Reinforcement (direct or vicarious) of peer aggression by peers may also help explain the divergent trajectories of normal and clinical populations.

Scholars have also proposed that aggressive forms that are used, coincide with the most accepted behavior at a given developmental stage. The early application and use of physical aggression, and transition/maintained use of relational aggression over the life-span, fits well with social cognitive theory. Aggression is less tolerated as children grow older, and since physical aggression is more observable its cessation is more pronounced. Through modeling and vicarious reinforcement (or punishment) the use of physical aggression would be reduced, while the use of less observable/more covert forms of aggression may remain stable. This hypothesis is supported by findings that some males and females seem to transition from higher levels of physical aggression to higher levels of relational of aggression (Côté et al., 2007; Heilbron & Prinstein, 2008). This transition to a less detectable form of aggression would be reinforced more and punished less, allowing individuals to aggress with less social repercussions.

### **Functions of Aggression**

**Proactive aggression.** Scholars suggest that proactive aggression is purposive in nature and designed to accomplish self-serving goals (Heilbron & Prinstein, 2008). Social cognitive theory proposes that proactive or strategic patterns of aggressive behavior may be cultivated in social contexts as they demonstrate usefulness in obtaining social advantages (Bandura, 1991). Accordingly, it is proposed that proactive or purposive aggression is learned through operant and vicarious reinforcement (i.e., social learning). In the case of proactive aggression, reinforcement would take the form of attainment (or observation of attainment) of the goal of the aggressive behavior (e.g., social status or dominance).

Results from multiple studies show increased acceptance of strategic forms of aggression during adolescence. This increased acceptance may be due to the fact that adolescents who engage in proactive aggression are perceived as more popular to peers (Heilbron & Prinstein, 2008; Huang et al., 2011; Juvonen & Ho, 2008; Prinstein & Cillessen, 2003; Rose, Swenson, & Waller, 2004). For example, in a study of 235 10<sup>th</sup> graders, Prinstein and Cillessen (2003) found that proactive aggression was positively correlated with high-levels of peer-perceived popularity among adolescents, whereas reactive aggression was linked to low-levels of perceived social status. These authors postulated that adolescents who employ the use of proactive aggression may view this form of aggression as a tool to maintain their popularity.

These findings were further supported and advanced in a longitudinal study that examined overt and relational aggression and perceived popularity in third, fifth, seventh, and ninth graders (Rose et al., 2004). Rose and colleagues reported that covert forms of aggression were more highly correlated with perceived popularity than overt aggression, and that perceived popularity was positively linked to aggression only in older participants. Moreover, findings revealed that relational aggression may be more socially advantageous for adolescent females than for adolescent males (Rose et al., 2004).

From a social cognitive perspective, the findings from these two studies provide further insight into the development of aggressive behaviors. As adolescents are reinforced by attaining increasing social status (i.e., popularity) for strategic use of aggression, aggressive behaviors are likely to increase, as well as become more apparent to peers. The use of proactive or strategic forms of aggression by high-status adolescents may even be viewed as a means of maintaining their status (Prinstein & Cillessen, 2003).

From this social cognitive standpoint, it follows that adolescents observing the rewards associated with peers' strategic use of aggression (i.e., vicarious reinforcement) should also be inclined to engage in more proactive aggression. Results from other work support this supposition. For example, a two-year longitudinal study examining peer-aggression in middle-schoolers ( $n = 1,260$ ) found that peer-directed aggressive behaviors were positively correlated with adolescents' perception of "coolness" (i.e., high social status; Juvonen & Ho, 2008). Additionally, findings evidenced that adolescents who related peer-directed aggression with coolness at the beginning of the study increased in engagement of aggression during the second year (Juvonen & Ho, 2008). Similarly, other work indicates that the likelihood of adolescents endorsing and participating in aggressive behaviors increased if adolescents believed that such behaviors were sanctioned by peers with elevated social-status (Cohen & Prinstein, 2006). Findings from these studies further support a social-cognitive explanation for the perpetration of aggression during adolescence, as proactive aggression increases when peer-rewarded proactive aggression is experienced or observed. Unsurprisingly, Cohen and Prinstein's (2006) longitudinal analysis also revealed that aggression was positively linked to social status and negatively associated with social preference. In other words, aggressive adolescents typically are privileged with high status, but high-status adolescents are not liked well by their peers. As being liked by peers is associated with "coolness," perhaps the relationship between popularity and proactive aggression is curvilinear; meaning that proactive aggression helps with popularity, only up to a point, after which peers like aggressors less thereby reducing their popularity.

**Reactive Aggression.** Reactive aggression has been defined as “a response to antecedent conditions of provocation or frustration that tend to be interpersonal and hostile” (Heilbron & Prinstein, 2008, p. 180). In other words, reactive aggression occurs in response to aggression from others, and responses are, by and large, emotionally charged, lack control, and are intended to inflict harm. Unlike proactive aggression, reactive aggression is enacted with little to no benefit to reactive aggressors (Liu, 2004). An example of reactive aggression would be a teen verbally or physically lashing out at a peer that hurt his or her feelings. Reactive aggression outbursts initially produce increased attention from peers, which may act as a reinforcement for reactive aggression; however, these outbursts also violate social norms, resulting in different long-term outcomes than proactive aggression.

Reactive aggression has been linked to low-social status in adolescence (Prinstein & Cillessen, 2003). For example, in a meta-analysis of 42 studies, Card and Little (2006) found that reactive aggression was more strongly negatively correlated with prosocial behaviors and more strongly positively highly correlated to maladjustment than proactive aggression. As reactive aggression typically lacks planning and is spontaneous in nature, this response pattern does not correspond with the need in adolescence to develop the ability to evaluate situations, produce hypothetical and alternative courses of action, and make informed independent decisions (Beckert, 2007). Considering that these fore-thinking abilities are cultivated and developed largely in adolescence, it stands to reason that lack of development of evaluative thinking in adolescence leaves adults ill-equipped to deal with adult situations presented in adulthood (Beckert, 2007).

### **Cognitive Distortions**

Cognitive distortions have been defined as “inaccurate or biased ways of attending to, or conferring, meaning upon experiences” (Barriga, Gibbs, et al., 2001, p. 1). Research and theory divide cognitive distortions into two categories: primary and secondary cognitive distortions (Barriga & Gibbs, 1996). Primary cognitive distortions (i.e., self-centered) originate from a bias that is egotistic in nature and occur when an individual’s needs, wants, and views are regarded as so important that expectations, wants, needs, and legitimate views of others are completely disregarded or not fully taken into consideration (Barriga, Gibbs, et al., 2001; Nas et al., 2008). In early to middle childhood an egocentric viewpoint is common, but typically decreases as children mature (Côté et al., 2007; Heilbron & Prinstein, 2008). Importantly, juveniles that engage in delinquent behaviors have been shown to have a greater propensity for primary/self-serving cognitive distortions (Barriga, Morrison, et al., 2001; ten Cate, 2011). High levels of primary cognitive distortions have also been correlated with lower levels of empathy and developmental delays in social perspective taking and moral judgement (Barriga, Morrison, et al., 2001; Barriga, Sullivan-Cosetti, & Gibbs, 2009).

Secondary cognitive distortions include assuming the worst, blaming others, and minimizing/mislabeling, and are rationalizations that are employed before or after externalizing behaviors to neutralize empathy, guilt, and conscience (Bandura, 1991; Nas et al., 2008). Use of secondary cognitive distortions allows for protection of one’s self-image while engaging in socially inappropriate behaviors (Barriga et al., 2009; Nas et al., 2008). Moral development scholars describe secondary cognitive distortions as “mechanisms of moral disengagement” that help to form moral judgements that distort and rationalize facts, allowing externalizing behaviors to be disassociated from self-

assessment (Bandura, 1991; Barriga, Gibbs, et al., 2001; Barriga, Morrison, et al., 2001; ten Cate, 2011).

With regard to moral issues, social cognitive theory postulates that moral thought, environments, affect, and behavior influence one another in triadic-reciprocal manner. Through these mutual interactions, cognitive restructuring of moral systems can change perspectives so that externalizing behaviors are viewed as acceptable. The result of this process is that harmful behaviors are viewed as serving moral purposes and are thereby considered to be personally and socially appropriate by individuals with cognitive distortions. Harm inflicted is perceived by the aggressor as unanticipated, unintentional, or blame is placed on the victim or situational factors. Doing so allows the aggressor to distort, minimize, or ignore harm to others, resulting in little to no self-reproach. Individuals that continue to engage in behaviors that are justified by way of secondary cognitive distortions become more accepting of behaviors that would originally foster guilt. Irrational patterns of thought contribute to faulty assessments of social situations, and inaccurate appraisals of social situations increase the probability of inappropriate or externalizing responses, resulting in flawed moral judgment (Bandura, 1991). Consistent with these notions, several studies have shown positive correlations between cognitive distortions and externalizing behaviors (Barriga & Gibbs, 1996; Barriga, Hawkins, & Camelia, 2008).

In one study, van Leeuwen, Rodgers, Gibbs, and Chabrol (2014) investigated the effects primary and secondary cognitive distortions on antisocial behaviors in a sample of high school students ( $n = 972$ ) and found that primary cognitive distortions significantly mediated the relationship between secondary cognitive distortions and antisocial

behaviors. In addition to these findings, researchers also found that secondary cognitive distortions significantly mediated the relationship between primary cognitive distortions. The combination of these findings does not clarify which comes first but suggests that both primary and secondary cognitive distortions contribute to antisocial behaviors. A different study of 724 high school students examining the relationship between antisocial behaviors and primary and secondary cognitive distortions found that primary cognitive distortions were positively correlated with aggressive behavior and were more prevalent in students scoring in the clinical range (van der Velden, Brugman, Boom, & Koops, 2010). Additionally, longitudinal analyses suggested that primary cognitive distortions may have been preceded by antisocial behaviors. Social-cognitive theory would suggest that initially secondary cognitive distortions may be employed after engaging in antisocial behaviors, and that continued use of secondary cognitive distortions may lead to the formation of primary cognitive distortions. It also is predictable that students scoring in the clinical range would have a higher rate of cognitive distortions, as cognitive distortions would be needed to justify antisocial behavior.

As expected, findings from multiple studies suggest that cognitive distortions are more prevalent in clinical populations than nonclinical populations. One such study examined differences in cognitive distortions and levels of moral judgement between incarcerated and non-incarcerated adolescents (Lardén, Melin, Holst, & Långström, 2006). Researchers compared 58 incarcerated and 58 “typical” adolescents matching for age, gender, socio-economic status, and ethnicity. Adolescent self-reports revealed that incarcerated adolescents had more cognitive distortions than “typical” adolescents. Additionally, incarcerated youth displayed less mature moral judgements when compared

to “typical” adolescents. Social cognitive theory would explain the lack of maturity in moral judgement as a result of constant use of secondary cognitive distortions to protect the self from self-censure. As secondary cognitive distortions protect self-image while engaging in antisocial behaviors, it is expected that individuals that engage in externalizing behaviors would employ them more often (Bandura, 1991).

In a more recent study, researchers compared levels of cognitive distortions in clinical and normal populations (Wallinius, Johansson, Larden, & Dernevik, 2011). Results demonstrated that cognitive distortions were more widespread in clinical populations, echoing findings from other studies (Brazão et al., 2015; Frick & White, 2008; Gini, Pozzoli, & Hymel, 2014; Hoogsteder, Wissink, Stams, van Horn, & Hendriks, 2014). Consistent with a social-cognitive perspective, cognitive distortions can protect individuals’ self-images when engaging in antisocial behaviors; without these distortions, individuals would self-censure more frequently and feel more remorse for actions inflicting harm on others. How cognitive distortions are associated with externalizing behaviors makes sense, but they do not explain changes in rates of externalizing behaviors during adolescence. One possible explanation for these changes in externalizing behaviors during adolescence is the formation of cognitive autonomy.

### **Autonomy**

Adolescence is a time in which the brain and body undergo changes that result in increased emotions, body size and weight, freedom and autonomy, and cognitive ability. The prefrontal cortex begins to develop in early adolescence and continues to slowly mature throughout adolescence. This portion of the brain is associated with executive functions and control, self-regulation, contingency planning, hypothetical thinking, and

long-term planning (Steinberg, 2004, 2011; Steinberg & Silverberg, 1989). Around the same time as the prefrontal cortex begins to develop, the dopaminergic system also begins to develop. Unlike the slow maturation of the prefrontal cortex, the dopaminergic system develops quite quickly, flooding the prefrontal cortex with dopamine (Casey, Getz, & Galvan, 2008; Crowley et al., 2015; Steinberg, 2010). The fast development of the dopaminergic system in early adolescence marks a lifetime peak in dopamine production (Steinberg, 2008). While the slow development of the adolescent prefrontal cortex allows for increased cognitive abilities such as abstract thinking and hypothetical thought, the accelerated development of the dopaminergic system often renders adolescents ill-equipped to make adult-like decisions and act autonomously (Casey, Galvan, & Hare, 2005; Casey et al., 2008; Steinberg, 2008).

Autonomy has been generally described as an individual's ability to "rule one's self" and is central to development (Beckert, 2005). Erikson (1967) was one of the earliest and most prominent theorists to look at autonomy. Due to Erikson's inclusion of autonomy in his second developmental stage "autonomy versus shame and doubt," autonomy was originally pigeon-holed as the primary task of toddlerhood. Today, many developmentalists acknowledge that the pursuit of autonomy is also central to adolescent development. Since Erikson, the construct of autonomy has been divided into three dimensions by scholars: behavioral, emotional, and cognitive. Behavioral autonomy concerns the ability to act independently and emotional autonomy concerns becoming emotionally independent. Importantly, neither of these dimensions of autonomy are unique to adolescence (Beckert, 2012; Steinberg et al., 2008). Cognitive autonomy is unique to adolescence as it involves new ways of thinking that are not used prior to

adolescence. As such, cognitive autonomy offers possible explanations to changes in externalizing behaviors for both normal and clinical populations.

### **Cognitive Autonomy**

Cognitive autonomy concerns the ability to think for oneself (Beckert, 2005) and includes the ability to listen to others' opinions, consider, take into account others' perspectives, generate and anticipate possible consequences for one's self and for others, and to make independent decisions (Steinberg, 2008). Social-cognitive theory views this development as a gradual process of cognitive self-regulation that is constructed from past interactions with the environment (Zimmer-Gembeck & Collins, 2003). Facilitated by the previously mentioned development in the brain, these changes allow for complex and abstract thought processes that continue to grow through adolescence and adulthood. While the ability to make informed decisions independently is highly valued in adulthood, the construct of cognitive autonomy has not been investigated as deeply as the other dimensions of autonomy by the academic community. The sparsity of investigation into cognitive autonomy is largely because behavioral and emotional autonomy are more easily observable. Correspondingly, measurement of a less observable construct like autonomy has been more difficult.

Autonomy researchers signaled the need for a cognitive component long before its introduction. In the past, autonomy scholars have introduced constructs incongruent with both emotional and behavioral dimensions of autonomy, including goal setting (Allen, Hauser, Bell, & O'Connor, 1994; Markus, 1987), decision making (Frank, Avery, & Laman, 1988), attitudinal independence and autonomy (Bandura, 1977; Noom, Deković, & Meeus, 2001), and contemplating consequences (Trad, 1994). Despite their

long-standing relevance, reliable measurement for many of these constructs was problematic (Beckert, 2005). Addressing the limitation of measurement, Beckert (2005) proposed that the construct must be observable and result in a “product that is unique to cognitive autonomy” (p. 13). Beckert proposed the construct of self-evaluation as this product due to the need for executive thought processes and its internal nature. To this end, Beckert (2007) proposed and validated The Cognitive Autonomy and Self-Evaluation (CASE) inventory. The CASE inventory consists of five observable constructs, previously identified by scholars, related to cognitive autonomy and the product of self-evaluation: evaluative thought (i.e., consequence calculation/evaluation and perspective taking), comparative validation (i.e., influence weighing others’ opinions), decision making (informed and independent), self-assessment (e.g. self-evaluation), and voicing opinions (educated opinions at appropriate times). This refinement in measurement has facilitated quantitative analyses of the cognitive autonomy construct.

One recent investigation assessed the associations between cognitive autonomy, texting volume, and attachment of high schoolers in northern Utah ( $n = 180$ ; Cutler, 2014). Researchers found that females scored lower than males on four of the five cognitive autonomy subscales and that lower scores were associated with higher rates of self-reported texting. (Correspondingly, females also scored higher in attachment measures than males.) These findings conform to previous research indicating that males tend to be more autonomous than females (Zimmer-Gembeck & Collins, 2003; Zimmer-Gembeck, Madsen, & Hanisch, 2011).

Traditionally, autonomy has been valued more by individualistic cultures than collectivistic ones (Lee, Beckert, & Goodrich, 2010). Researchers conducted a study to compare whether levels of cognitive autonomy varied as a function of cultural orientation (individualistic, collectivistic, and transitional) in Taiwanese school students ( $n = 781$ ) (Lee et al., 2010). Results suggested that there were not significant differences between cultural identifications, but there were significant gender differences in levels of cognitive autonomy. Lee and colleagues noted that this was likely due to the fact that Taiwanese culture generally values males above females. When comparing levels of cognitive autonomy between American ( $n = 330$ ) and Taiwanese ( $n = 376$ ) high schoolers, cultural differences were more pronounced (Beckert, Lee, & Vaterlaus, 2012). Findings indicated that Taiwanese students were more likely to have higher scores in the area of evaluative thinking than their American counterparts, whereas Americans were likely to be higher in the other four constructs. Additionally, gender differences were more prevalent among Taiwanese students than American students. Males typically scored higher in the domains of self-assessing, evaluative thinking, comparative validation, and voicing opinions, providing evidence that males tend to be more cognitively autonomous than females in non-clinical populations.

### **Cognitive Autonomy in Clinical Populations**

From a theoretical standpoint, adolescents that engage in evaluative thought should be able to weigh possible outcomes allowing them to make informed and independent decisions leading to positive outcomes (Beckert, 2007). Yet, the limited research examining adolescent clinical populations indicates that this relationship does not exist. One such study examined the effect of wilderness therapy on cognitive

autonomy and self-efficacy in a clinical sample of Israeli youth (Margalit & Ben-Ari, 2014). Participants were divided into three conditions: intervention, partial intervention, and control. Researchers found that youth in the intervention and partial intervention groups both showed statistically significant gains in levels of cognitive autonomy and decision-making abilities over the control group, with the intervention group showing the greatest increases. These findings illustrate that therapy can be used to increase levels of cognitive autonomy and decision-making abilities. Conceptually, increases in cognitive autonomy should result in decreases in antisocial behaviors; yet, researchers found no associations between increases in cognitive autonomy and antisocial behaviors.

Other researchers compared levels of cognitive autonomy between normative and clinical populations (Reiser, 2007). Generally speaking, Reiser found little to no differences between the cognitive autonomy levels of students from a public high school ( $n = 137$ ) and adolescents (ages 14-18) from a residential treatment center ( $n = 119$ ). The one exception to this was that ninth-grade high school females reported greater cognitive autonomy (in all areas except for comparative validation) than ninth graders in residential treatment. Interestingly, alpha coefficients for the evaluative thinking subscale were significantly lower in the clinical population. While these findings indicate that levels of cognitive autonomy between community and clinical populations are more similar than different, they also are puzzling. Theoretically, higher levels of cognitive autonomy should allow adolescents evaluate potential outcomes and thus protect youth from engaging in antisocial behaviors that result in undesirable outcomes; yet clinical and normal populations show negligible differences in levels of cognitive autonomy. If levels

of cognitive autonomy are similar between normative and clinical populations, why are some adolescents engaging in problem behaviors and others not?

### **The Present Study**

Cognitive distortions are more prevalent in clinical populations and have been positively correlated with problem behaviors. Additionally, as cognitive autonomy develops, youth gradually rely less on others during assessment and decision-making processes. For typical adolescents, this transition should be correlated with positive outcomes and decreases in antisocial behaviors (Beckert, 2007). However, this evaluative process may be compromised for youth (especially those in clinical populations) that are unknowingly employing cognitive distortions. The opinions of parents and peers that may have guided or helped provide more accurate assessments and may be valued less as cognitive autonomy develops (Beckert, 2007, 2012), and even more so by youth that employ mechanisms of moral disengagement (i.e. secondary cognitive distortions; Bandura, 1991, 2001). Thus, increased cognitive autonomy may exacerbate the implications of flawed evaluations (i.e., cognitive distortions) and be connected to more negative outcomes. In other words, youth's cognitive distortions may have greater influence than before cognitive autonomy started to develop. Until now analysis of the relation between cognitive distortions and externalizing behaviors has not included the construct of cognitive autonomy. The theoretical interaction between cognitive distortions and cognitive autonomy and the possible implications offer a compelling case that could help provide insight into the differing outcomes in normal and clinical populations.

The present study aimed to fill this gap by examining whether cognitive autonomy moderates the association between cognitive distortions and externalizing behaviors in a sample of youth from a residential treatment facility. The first aim investigated whether a relationship between cognitive distortions and externalizing behaviors existed in a clinical population of adolescents. Consistent with past research (Barriga et al., 2008, 2000), it was hypothesized that cognitive distortions would be positively associated with externalizing behaviors. The second aim was to investigate whether cognitive autonomy moderated the relationship between cognitive distortions and externalizing behaviors in a clinical population of adolescents. Given the focal population, it was hypothesized that cognitive distortions would be more strongly related to externalizing behaviors when levels of cognitive autonomy were high as opposed to low.

## METHODS

### **Participants**

Data for this study were originally collected as part of the admission process at a residential treatment center in the mountain west area of the United States. Though previously collected, this data had not been analyzed in reference to the variables of

cognitive distortion, cognitive autonomy, or externalizing behaviors. Although there were two waves of data collection, in order to avoid contaminating potential associations with participants' treatment, the present study focused only on data from when adolescents were admitted to the facility. At admission, there were 81 male and 65 female adolescents ranging from age 10 to age 17. The sample was modestly diverse: 73.8% Caucasian, 10.3% Hispanic, 10.3% African American, 2% Other, 1% Asian, 0.5% Peruvian, 0.5% Pacific Islander, 0.5% Native American, 0.5% Multi-Ethnic, and 0.5% African. About one third of the sample was adopted.

### **Procedures**

The data for this study were collected by the residential treatment center as part of the program's internal program evaluation. Data for this study was collected from late 2014 to the present. Parent permission and youth assent for potential participation was obtained during the admission process. Participating youth completed web-based questionnaires (including demographic questions and surveys) on personal computers via Qualtrics software within one month of entrance into the residential treatment center during afterschool hours. Completion of the questionnaires ranged from 45 to 75 minutes for most students. After receiving written authorization from the residential treatment center and Utah State University IRB approval has been obtained, this data set was requested from the residential treatment center without any identifying information that could potentially be linked back to the participants.

### **Measures**

#### **Externalizing Behaviors**

The Youth Self-Report (YSR) for ages 11-18 (Achenbach, 2001) was used to measure externalizing behaviors. The YSR consists of 112 questions measured on a Likert scale ranging from 0 (not true) to 2 (very true or often true). Scores on the YSR contribute to eight subscales of syndromes as well as six subscales relating to DSM diagnosis; across all subscales higher scores are associated with more severe diagnosis. Of the eight syndrome-related subscales, aggressive behavior (17 questions) and rule-breaking behavior (15 questions) subscales were summed to compute the externalizing scale of the YSR. Sample items for these subscales include: “I get in many fights” and “I disobey at school.” The externalizing scale of the YSR has a reported alpha coefficient of .90 (Achenbach & Rescorla, 2001b; Ebesutani, Bernstein, Martinez, Chorpita, & Weisz, 2011; Ivanova et al., 2007), indicating good internal reliability. The alpha coefficient for the externalizing scale for this study was .87. Achenbach provided evidence of criterion validity and content validity through discrimination between referred and non-referred, demographically matched youth (Achenbach, 1991b; Achenbach & Rescorla, 2001b). Subsequent studies have also provided evidence of factor-analytic, content, convergent, and discriminant validity across 23 languages and cultures (Achenbach et al., 2002; Ivanova et al., 2007; Izutsu et al., 2005; Leung et al., 2006; Nakamura, Ebesutani, Bernstein, & Chorpita, 2009; Rescorla et al., 2013).

### **Cognitive Distortions**

The How I Think (HIT) questionnaire was used to measure four areas of cognitive distortions. The HIT contains 54 questions that are measured on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The cognitive distortions portion of the HIT consisted of 39 questions divided among each of the four individual

cognitive distortion subscales: self-centered (9), blaming others (10), minimizing/mislabeling (9), and assuming the worst (11). Scores were summed for each of the four subscales, resulting in a separate score for each type of cognitive distortion. Higher scores in each subscale are associated with higher levels of cognitive distortions only in that subscale or type. For example, an individual may have high levels of cognitive distortions in the blaming others category and have a low score in the assuming the worst type. Sample questions include: “I have to lie sometimes to get what I want” and “People are always trying to start fights with me.” Barriga et al. (2001) reported alpha coefficients ranging from .79 to .83 indicating good internal reliability. Alpha coefficients for this study ranged from .83 to .87. Concerning the validity of this measure, authors provided evidence of content, factor-analytic, convergent, divergent, discriminant, and construct validity (Barriga, Gibbs, et al., 2001). Subsequent studies have evaluated the HIT in the Spanish, Italian, Danish, French, and Bengali languages and cultures providing similar evidence of factor analytic validity, convergent and divergent validity, and concurrent validity (Bacchini, De Angelis, Affuso, & Brugman, 2016; Nas et al., 2008; Peña Fernández, Andreu Rodríguez, Barriga, & Gibbs, 2013; Plante et al., 2012; Rezaul Karim & Begum, 2016; van der Velden, Brugman, Boom, & Koops, 2010; van Leeuwen, Chauchard, Chabrol, & Gibbs, 2013; van Leeuwen et al., 2014).

### **Cognitive Autonomy**

The Cognitive Autonomy and Self-Evaluation (CASE) inventory was used to assess levels of adolescent cognitive autonomy. The CASE inventory consists of 27 questions measured on a 5-point Likert scale ranging from 1 (never or strongly disagree) to 5 (always or strongly agree) with some items that were reverse coded. This study used two of the five subscales that constitute the framework of the CASE inventory, specifically the subscales of evaluative thinking (eight questions) and decision making (six questions). Sample items include: "I think about the consequences of my decision" and "I am better at decision making than my friends." The validity of this measure was originally established by Beckert (2007). The Cronbach alpha coefficients for each subscale in this study were .89 for evaluative thinking and .80 for decision-making. These findings are consistent with previous studies (Cutler, 2014; Davis, 2010; Lee & Beckert, 2012) indicating good internal consistency.

## RESULTS

Prior to analyses, assumptions were tested to determine if the data fit linear regression assumptions of linearity, normality, homoscedasticity, and lack of multicollinearity. Initially, the frequency distribution and descriptive statistics for each demographic, dependent, and independent variable was examined. Starting with demographic variables, this sample consisted of 146 youth ranging from age 10 to 17 with a mean age of 15.32 ( $SD = 1.61$ ). Fifty-five percent of the participants were male (45% female). Due to small numbers of participants in ethnic minority groups, the ethnic composition of the sample was dichotomized (0 = White; 1 = non-white); 77.4% of the sample were Caucasian and 23.6% were non-White. Adopted youth made up 36.3% of the sample (0 = not adopted; 1 = adopted). The dependent variable, externalizing behaviors, held a mean of 19.51 ( $SD = 9.51$ ). For cognitive distortion variables, self-centered had a mean of 2.65 ( $SD = .87$ ), blaming others produced a mean of 2.39 ( $SD = .87$ ), minimizing guilt had a mean of 2.38 ( $SD = .90$ ), and the mean of assuming the worst was 2.84 ( $SD = .79$ ). The two cognitive autonomy variables of evaluative thinking and decision-making had means of 26.07 ( $SD = 6.70$ ) and 22.81 ( $SD = 4.45$ ), respectively. Skewness and kurtosis values for the demographic, dependent, and independent variables fell within the standards of  $\pm 2$ , indicating normal distributions (see Table 1).

To determine if multicollinearity was present between variables, a series of Pearson bivariate correlations were performed first (see Table 1). Only two correlations were found: (a) age was weakly positively correlated with decision-making; and (b) adoption weakly positively correlated with ethnicity. With regard to the dependent

variable externalizing behaviors, Pearson bivariate correlations revealed moderate positive correlations between cognitive distortion independent variables (self-centered thoughts, blaming others, minimizing guilt, assuming the worst), and weak negative correlations with cognitive autonomy independent variables (evaluative thinking, decision-making). Cognitive distortion variables were strongly positively correlated one with another. They were also weakly negatively correlated with evaluative thinking; however, only assuming the worst was also weakly negatively correlated with decision-making. Decision-making was moderately positively correlated with evaluative thinking. Variance inflation factors (VIF) were then explored to test for multicollinearity within the multiple regression framework. Across analyses VIF values ranged from 1.5 - 5.6, within acceptable values (Hair, Anderson, Tatham, & Black, 1998), signifying a lack of multicollinearity. While correlations between externalizing behaviors and cognitive distortion variables were moderate, this was expected as these variables have been shown to be predictive in the past. Scatterplots were examined for the assumptions of homoscedasticity and linear relationship. Scatterplots of both independent and dependent variables showed no heteroscedasticity and no curvilinear relationships.

Table 1  
*Means, standard deviations, skewness, and kurtosis for demographic, dependent, and independent variables*

Measure	M	SD	Skewness	Kurtosis	1	2	3	4	5	6	7	8	9	10	11
1 Age	15.32	1.61	-1.35	1.85	.03	.19*	-.02	.00	.059	.144	.085	.14	.14	-.074	.29**
2 Adopted	0.36	0.48	0.58	-1.69	-.24**	-.02	-.021	-.053	-.085	-.13	-.13	.06	.06	.11	.025
3 Ethnicity	0.77	0.42	-1.32	-0.25	.02	-.038	.12	.078	.11	.19*	-.16	-.07	-.07	.04	-.087
4 Gender	0.55	0.50	-0.22	-1.98	.107	-.063	.51**	.54**	.57**	.77**	.84**	.84**	.84**	-.24**	.06
5 Externalizing	19.12	9.51	0.61	0.24	-.063	.543**	.79**	.84**	.84**	.84**	.84**	.84**	.84**	-.24**	.10
6 Self-Centered	2.65	0.87	0.69	-0.03	-.063	.79**	.84**	.84**	.84**	.84**	.84**	.84**	.84**	-.24**	.14
7 Blaming	2.39	0.87	0.67	0.07	-.063	.84**	.84**	.84**	.84**	.84**	.84**	.84**	.84**	-.24**	.14
8 Minimizing	2.38	0.90	0.74	-0.19	-.063	.84**	.84**	.84**	.84**	.84**	.84**	.84**	.84**	-.24**	.14
9 Assuming	2.84	0.79	0.76	0.57	-.063	.84**	.84**	.84**	.84**	.84**	.84**	.84**	.84**	-.24**	.14
10 Evaluative	26.07	6.70	-0.28	0.15	-.063	.84**	.84**	.84**	.84**	.84**	.84**	.84**	.84**	-.24**	.14
11 Decision	22.81	4.45	-0.91	2.09	-.063	.84**	.84**	.84**	.84**	.84**	.84**	.84**	.84**	-.24**	.14

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Hierarchical linear regression analyses were performed to determine if significant relationships existed between the dependent variable (i.e., externalizing behaviors) and the independent variables (i.e., individual dimensions of cognitive distortion and cognitive autonomy) and to test for moderation effects, resulting in eight separate analyses. Each of these analyses consisted of three models. Model 1 included the control variables, specifically age at entry, ethnicity (0 = White; 1 = non-White), adopted status (0 = not adopted; 1 = adopted), and gender (0 = female; 1 = male). Model 2 included one cognitive distortion variable and one cognitive autonomy variable (for all analyses, all cognitive distortion and cognitive autonomy variables were centered at their means); and Model 3 tested for moderation using the product term of the two centered variables from model 2, for each combination of independent variables.

The first analysis regressed externalizing behaviors on the cognitive distortion variable self-centered thinking and the cognitive autonomy variable evaluative thinking. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 2). The results from Model 2 accounted for 38% of the total variance in youth's externalizing behaviors. Consistent with expectations, self-centered thinking was positively related to externalizing behaviors. Inconsistent with expectations for this population, evaluative thinking was negatively (not positively) associated with externalizing behaviors (see Table 2). Further, Model 3 revealed the evaluative thinking did not moderate the relationship between self-centered thoughts and externalizing behaviors (see Table 2).

Table 2

*Summary of Hierarchical Linear Regression of Self-Centered Thoughts and Evaluative Thinking Predicting Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.21	0.40	0.04	0.21	0.40	0.04
Adopted	0.65	1.70	0.03	-0.24	1.36	-0.01	-0.24	1.37	-0.01
Ethnicity	1.00	1.99	0.04	1.72	1.60	0.08	1.72	1.63	0.08
Gender	-2.03	1.60	-0.11	-2.28	1.28	-0.12	-2.28	1.28	-0.12
Self-Centered				5.36	0.76	0.49**	5.36	0.77	0.49**
Evaluative				-0.36	0.10	-0.26**	-0.36	0.10	-0.26**
Self-Centered X Evaluative							0.00	0.11	0.00
$R^2$		0.01			0.38			0.38	
$F$ for change in $R^2$		0.49			41.86**			0.00	

*Note.* Self-Centered thoughts and evaluative thinking were centered at their means

\* $p < .05$ . \*\* $p < .01$ .

The second analysis regressed externalizing behaviors on the cognitive distortion variable blaming others and the cognitive autonomy variable evaluative thinking. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 3). The results from Model 2 accounted for 39% of the total variance in youth's externalizing behaviors. In line with hypotheses, blaming others was positively related to externalizing behaviors. Contrary to hypotheses for this population, evaluative thinking was negatively (not positively) associated with externalizing behaviors (see Table 3). Also, not in line with hypotheses, Model 3 revealed the evaluative thinking did not moderate the relationship between blaming others and externalizing behaviors (see Table 3).

Table 3

*Summary of Hierarchical Linear Regression of Blaming Others and Evaluative Thinking Predicting Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.52	0.40	0.09	0.51	0.41	0.09
Adopted	0.65	1.70	0.03	-0.73	1.36	-0.04	-0.74	1.37	-0.04
Ethnicity	1.00	1.99	0.04	0.84	1.59	0.04	0.82	1.60	0.04
Gender	-2.03	1.60	-0.11	-3.52	1.30	-0.18	-3.52	1.31	-0.18
Evaluative				-0.39	0.10	-0.28**	-0.39	0.10	-0.28**
Blaming				5.48	0.78	0.50**	5.46	0.79	0.50**
Blaming X Evaluative							-0.01	0.10	-0.01
$R^2$		0.01			0.39			0.39	
$F$ for change in $R^2$		0.49			42.18**			0.01	

*Note.* Blaming others and evaluative thinking were centered at their means

\* $p < .05$ . \*\* $p < .01$ .

The third analysis regressed externalizing behaviors on the cognitive distortion variable minimizing/mislabeling and the cognitive autonomy variable evaluative thinking. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 4). The results from Model 2 accounted for 39% of the total variance in youth's externalizing behaviors. Consistent with expectations, minimizing/mislabeling was positively related to externalizing behaviors. Inconsistent with hypotheses for this population, evaluative thinking was inversely (not positively) associated with externalizing behaviors (see Table 4). Finally, Model 3 revealed the evaluative thinking did not moderate the relationship between minimizing/mislabeling and externalizing behaviors (see Table 4).

Table 4

*Summary of Hierarchical Linear Regression of Minimizing/Mislabeling Blame and Evaluative Thinking Predicting Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.30	0.40	0.05	0.30	0.40	0.05
Adopted	0.65	1.70	0.03	-0.97	1.36	-0.05	-1.01	1.36	-0.05
Ethnicity	1.00	1.99	0.04	1.42	1.59	0.06	1.23	1.62	0.05
Gender	-2.03	1.60	-0.11	-3.30	1.29	-0.17	-3.31	1.29	-0.17
Evaluative				-0.33	0.10	-0.23**	-0.34	0.10	-0.24**
Minimizing				5.42	0.76	0.51**	5.36	0.76	0.51**
Minimizing X Evaluative							-0.07	0.11	-0.04
$R^2$		0.01			0.39			0.39	
$F$ for change in $R^2$		0.49			43.01**			0.40	

*Note.* Minimizing/mislabeling and evaluative thinking were centered at their means

\* $p < .05$ . \*\* $p < .01$ .

The fourth analysis regressed externalizing behaviors on the cognitive distortion variable assuming the worst and the cognitive autonomy variable evaluative thinking. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 5). The results from Model 2 accounted for 39% of the total variance in youth's externalizing behaviors. Consistent with expectations, assuming the worst was positively related to externalizing behaviors. Contrary to expectations for this population, evaluative thinking was negatively (not positively) associated with externalizing behaviors (see Table 5). Additionally, Model 3 revealed the evaluative thinking did not significantly moderate the relationship between assuming the worst and externalizing behaviors (see Table 5).

Table 5

*Summary of Hierarchical Linear Regression of Assuming the Worst and Evaluative Thinking Predicting Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.48	0.40	0.08	0.48	0.40	0.08
Adopted	0.65	1.70	0.03	-1.17	1.36	-0.06	-1.17	1.37	-0.06
Ethnicity	1.00	1.99	0.04	0.63	1.58	0.03	0.64	1.60	0.03
Gender	-2.03	1.60	-0.11	-2.48	1.27	-0.13	-2.48	1.28	-0.13
Evaluative				-0.29	0.10	-0.21**	-0.29	0.10	-0.21**
Assuming				6.28	0.88	0.52**	6.29	0.89	0.52**
Assuming X Evaluative							0.00	0.10	0.00
$R^2$		0.01			0.39			0.39	
$F$ for change in $R^2$		0.49			42.98**			0.00	

*Note.* Assuming the worst and evaluative thinking were centered at their means

\* $p < .05$ . \*\* $p < .01$ .

The fifth analysis regressed externalizing behaviors on the cognitive distortion variable self-centered thinking and the cognitive autonomy variable decision-making. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 6). The results from Model 2 accounted for 37% of the total variance in youth's externalizing behaviors. In line with hypotheses, self-centered thinking was positively related to externalizing behaviors. Conflicting with hypotheses for this population, decision-making was negatively associated with externalizing behaviors (see Table 6). Also incongruent with hypotheses, Model 3 revealed the decision-making did not significantly moderate the relationship between self-centered thoughts and externalizing behaviors (see Table 6).

Table 6

*Summary of Hierarchical Linear Regression of Self-Centered Thoughts and Decision-Making Predicting Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.44	0.42	0.08	0.42	0.42	0.07
Adopted	0.65	1.70	0.03	0.32	1.37	0.02	0.34	1.37	0.02
Ethnicity	1.00	1.99	0.04	2.52	1.61	0.11	2.24	1.66	0.10
Gender	-2.03	1.60	-0.11	-1.89	1.32	-0.10	-1.73	1.33	-0.09
Self-Centered				6.03	0.74	0.55**	6.17	0.77	0.57**
Decision				-0.46	0.15	-0.22**	-0.49	0.16	-0.23**
Self-Centered X Decision							-0.14	0.18	-0.06
$R^2$		0.01			0.37			0.37	
$F$ for change in $R^2$		0.49			38.78**			0.57	

*Note.* Self-Centered thoughts and decision-making were centered at their means

\* $p < .05$ . \*\* $p < .01$ .

The sixth analysis regressed externalizing behaviors on the cognitive distortion variable blaming others and the cognitive autonomy variable decision-making. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 7). The results from Model 2 accounted for 35% of the total variance in youth's externalizing behaviors. Harmonious with proposed hypotheses, blaming others was positively related to externalizing behaviors. Discordant with hypotheses for this population, decision-making was negatively associated with externalizing behaviors (see Table 7). Also contradictory with expectations, Model 3 revealed the decision-making did not significantly moderate the relationship between blaming others and externalizing behaviors (see Table 7).

Table 7

*Summary of Hierarchical Linear Regression of Blaming Others and Decision-Making Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.73	0.43	0.12	0.75	0.43	0.13
Adopted	0.65	1.70	0.03	-0.16	1.39	-0.01	-0.12	1.40	-0.01
Ethnicity	1.00	1.99	0.04	1.54	1.63	0.07	1.79	1.67	0.08
Gender	-2.03	1.60	-0.11	-3.35	1.36	-0.18	-3.47	1.38	-0.18
Decision Blaming				-0.41	0.16	-0.19**	-0.41	0.16	-0.19**
Decision Blaming X				6.03	0.78	0.55**	6.02	0.78	0.55**
Decision							0.10	0.14	0.05
<i>R</i> <sup>2</sup>		0.01			0.35			0.35	
<i>F</i> for change in <i>R</i> <sup>2</sup>		0.49			35.85**			0.44	

*Note.* Blaming others and decision-making were centered at their means

\**p* < .05. \*\**p* < .01.

The seventh analysis regressed externalizing behaviors on the cognitive distortion variable minimizing/mislabeling and the cognitive autonomy variable decision-making. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 8). The results from Model 2 accounted for 37% of the total variance in youth's externalizing behaviors. In agreement with the expected findings, minimizing/mislabeling was positively related to externalizing behaviors. Contradictory with expectations for this population, decision-making was negatively associated with externalizing behaviors (see Table 8). Inconsistent with expectations, Model 3 revealed the decision-making did not significantly moderate the relationship between minimizing/mislabeling and externalizing behaviors (see Table 8).

Table 8

*Summary of Hierarchical Linear Regression of Minimizing/Mislabeling Blame and Decision-Making Predicting Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.46	0.42	0.08	0.45	0.42	0.08
Adopted	0.65	1.70	0.03	-0.54	1.38	-0.03	-0.55	1.38	-0.03
Ethnicity	1.00	1.99	0.04	2.06	1.61	0.09	1.85	1.66	0.08
Gender	-2.03	1.60	-0.11	-3.17	1.34	-0.17	-3.12	1.35	-0.16
Decision				-0.34	0.16	-0.16*	-0.34	0.16	-0.16*
Minimizing				5.97	0.74	0.57**	6.02	0.75	0.57**
Minimizing x Decision							-0.08	0.16	-0.04
$R^2$		0.01			0.37			0.37	
$F$ for change in $R^2$		0.49			38.67**			0.26	

*Note.* Minimizing/mislabeling and decision-making were centered at their means

\* $p < .05$ . \*\* $p < .01$ .

The final analysis regressed externalizing behaviors on the cognitive distortion variable assuming the worst and the cognitive autonomy variable decision-making. Model 1 indicated that the control variables were not associated with externalizing behaviors (see Table 9). The results from Model 2 accounted for 36% of the total variance in youth's externalizing behaviors. Concordant with expectations, assuming the worst was positively related to externalizing behaviors. Disparate with proposed hypotheses and other results for this population, decision-making was not associated (as opposed to negatively) with externalizing behaviors (see Table 9). Finally, Model 3 revealed the decision-making did not significantly moderate the relationship between assuming the worst and externalizing behaviors (see Table 9).

Table 9

*Summary of Hierarchical Linear Regression of Assuming the Worst and Decision-Making Predicting Externalizing Behaviors (N = 146)*

Variable	Model 1			Model 2			Model 3		
	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$	<i>b</i>	<i>SE B</i>	$\beta$
Age at Entry	-0.04	0.50	-0.01	0.55	0.42	0.09	0.54	0.43	0.09
Adopted	0.65	1.70	0.03	-0.82	1.39	-0.04	-0.84	1.40	-0.04
Ethnicity	1.00	1.99	0.04	1.07	1.61	0.05	0.97	1.66	0.04
Gender	-2.03	1.60	-0.11	-2.52	1.33	-0.13	-2.50	1.34	-0.13
Decision				-0.17	0.16	-0.08	-0.16	0.16	-0.08
Assuming				6.95	0.87	0.58**	6.96	0.88	0.58**
Assuming x Decision							-0.05	0.17	-0.02
$R^2$		0.01			0.36			0.36	
$F$ for change in $R^2$		0.49			37.62**			0.07	

*Note.* Assuming the worst and decision-making were centered at their means

\* $p < .05$ . \*\* $p < .01$ .

## DISCUSSION

Cognitive distortions affect how individuals' perceive and assess social situations as well as provide a mechanism to neutralize guilt while engaging in socially unacceptable behaviors (Bandura, 1991; Barriga & Gibbs, 1996). Studies have shown that levels of cognitive distortions are higher and are more prevalent in clinical populations than in nonclinical populations (Brazão et al., 2015; Lardén et al., 2006; Wallinius et al., 2011). Additionally, previous studies have consistently revealed positive relationships between cognitive distortions and externalizing behaviors in children and adolescents (Barriga et al., 2008, 2000; Côté et al., 2006). The effects of cognitive distortions may be mitigated prior to adolescence, as children rely more on parents and peers to help when faced with decisions. However, as adolescents mature they become more cognitively autonomous (Beckert, 2005); that is, they rely less on others to make decisions. In a typically developing population, this is a natural and healthy transition.

For adolescents with cognitive distortions, however, increased autonomy may distance adolescents from individuals that previously may have dampened the effects of cognitive distortions. This separation from “positive influences” could allow adolescents to neutralize guilt by way of their cognitive distortions when engaging in externalizing behaviors. In short, in a clinical population, the increases in cognitive autonomy may result in cognitive distortions having a greater influence on externalizing behaviors. Prior to this study, no research has examined the interplay of cognitive distortions and cognitive autonomy in conjunction with externalizing behaviors.

### **Cognitive Distortions**

The first aim of this study was to determine if cognitive distortions were positively associated with externalizing behaviors. Results demonstrated that all dimensions of cognitive distortion (i.e., self-centered thoughts, blaming others, minimizing/mislabeling blame, assuming the worst ) were positively linked with externalizing behaviors net of control variables, reaffirming conclusions from previously studies (Barriga et al., 2008, 2000). Bandura (2001) posited that the moral acceptability of an action is determined through personal assessment of personal standards, self-sanctions, and personal circumstances. Consistent with this notion, findings from this study suggest that, in a clinical population, adolescents’ externalizing behaviors are strongly related to how events are perceived and interpreted (Bandura, 1991). From a social cognitive perspective, these findings might imply that adolescents in a clinical population employ in mechanisms of moral disengagement (i.e., cognitive distortions) more frequently than adolescents in a normal population, resulting in externalizing behaviors being engaged in more frequently and/or to a more severe degree (Bandura,

2001). Social cognitive theory would suggest that individuals engaging in self-centered thoughts, specifically, would place little to no value on others' needs, wants, and ideas (Barriga et al., 2000). Since little value is attributed to others' needs, little remorse is felt when those needs are not met due to one's actions (Bandura, 1991, 2001). The positive associations between self-centered thoughts and externalizing behaviors add further support to this theory. Similarly, the association between blaming others and externalizing behaviors supports a social cognitive explanation that, by misattributing blame of harmful actions to external sources (Barriga et al., 2000), individuals insulate themselves from blame and remorse, thus preserving self-image (Bandura, 1991, 2001). Social cognitive theory would posit that minimizing/mislabeling allows individuals to preserve self-image through the devaluation of others and/or depicting unacceptable behavior as acceptable or commendable (Bandura, 1991, 2001; Barriga et al., 2000). This stance is supported by the positive association between minimizing/mislabeling blame and externalizing behaviors. A mind-set of assuming the worst, wherein individuals expect the worst-case scenario in social settings, protects self-image by attributing blame to others and not one's own behavior (Bandura, 1991; Barriga et al., 2000). In this study, the construct of assuming the worst had a positive relationship with externalizing behaviors. These findings add more support to the social cognitive position that, when in this mind-set, changing or improving behavior is thought to have the same outcome (Barriga et al., 2000), thus further removing the individual from responsibility for the consequences of his/her actions (Bandura, 1991).

### **Interplay of Cognitive Autonomy and Cognitive Distortions**

The main purpose of this study was to determine if cognitive autonomy moderated the relationship between cognitive distortions and externalizing behaviors. As this study dealt with a clinical population, it was expected that cognitive distortions would be more prevalent than in a normal population. With this expectation in mind, it was posited that cognitive distortions might contaminate the evaluative thinking and decision-making processes of cognitive autonomy. Following this line of thinking, it was hypothesized that cognitive autonomy would be positively associated with externalizing behaviors and further moderate the relationship between cognitive distortions and externalizing behaviors. The expected result was that cognitive autonomy would exacerbate the relationship between cognitive distortions and externalizing behaviors. However, testing revealed that the cognitive autonomy dimensions of evaluative thinking and decision-making were both negatively linked to externalizing behaviors in this clinical population, negating the premise on which the moderation hypothesis was grounded.

One potential reason for the negative relationship found between cognitive autonomy and externalizing behaviors is that cognitive autonomy theoretically operates similarly as it would in a nonclinical population. I say theoretical, because no studies have yet examined the connection between externalizing behaviors and cognitive autonomy in a nonclinical population. Another possible explanation for these findings is that cognitive autonomy is not fully developed until late adolescence (Chein, Albert, O'Brien, Uckert, & Steinberg, 2011; Steinberg, 2008, 2010). Conceivably, cognitive autonomy and cognitive distortions may function separately until later in adolescence or

adulthood when both constructs are more developed and a more consolidated self-image emerges. Another explanation is that cognitive autonomy may not be developed enough in the younger ages of this sample to counteract the effects of cognitive distortions on deliberative cognitive processes. Research has shown that the prefrontal-cortex does not fully develop until the early or mid-twenties (Arain et al., 2013; Johnson, Blum, & Giedd, 2009). As such, future research may benefit from exploring the associations between cognitive distortions, cognitive autonomy, and externalizing behaviors in older populations or examine whether age further moderates their relationships.

Alternatively, cognitive autonomy in early- and mid-adolescence may not provide as much distance from the ideas and/or opinions of parents and peers, as previously theorized. Previous studies have shown that parental attachment (Bahr, Hoffmann, & Yang, 2005; Choon, Hasbullah, Ahmad, & Ling, 2013; Harris-McKoy & Cui, 2013), and parents and peers (Chassin, Presson, Sherman, Montello, & McGrew, 1986; Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001; Tsakpinoglou, 2017) influence adolescent participation in externalizing behaviors. For example, parents help shape adolescents' decision-making process (Chassin et al., 1986; Tsakpinoglou, 2017) and also exert a certain amount of control over adolescent behavioral autonomy (Pavlova, Haase, & Silbereisen, 2011; Smetana, Campione-Barr, & Daddis, 2004). Youth in this sample were still under parental supervision. Several studies have found a negative correlation between parental involvement and externalizing behaviors (Brotman et al., 2011; Grolnick & Slowiaczek, 1994; Hill et al., 2004; Hill & Tyson, 2009). As this sample comes from higher SES families, higher parental involvement is possible. Family rules, parental oversight, and limiting of behavioral autonomy (due to underage status) may be

restricting the amount and/or severity of externalizing behaviors, thus minimizing the moderating effects of cognitive autonomy on the correlations between cognitive distortions and externalizing behaviors. Future research should include measures of parental involvement, attachment, and supervision to assess such possibilities.

It was theorized that cognitive distortions may corrupt autonomous cognitive processes, resulting in stronger positive associations with externalizing behaviors. However, analyses revealed that neither evaluative thinking nor decision-making moderated any of the possible relationships between the four cognitive distortions dimensions and externalizing behaviors. As previously discussed, youth from clinical and nonclinical populations exhibit similar levels of cognitive autonomy (Reiser, 2007), and studies that have connected higher levels of cognitive distortions with elevated levels of externalizing behaviors (Barriga et al., 2008; van der Velden et al., 2010; van Leeuwen et al., 2014). Perhaps, when dealing with externalizing behaviors, cognitive distortions may overshadow the effects of cognitive autonomy. This premise is supported by the fact that all dimensions of cognitive distortions were more highly associated with externalizing behaviors than either dimension of cognitive autonomy.

### **Limitations and Future Directions**

As with all studies, there were limitations with this study. One such limitation is that the population used in the study originated from a private residential treatment facility that was relatively expensive, suggesting that participants were likely from higher SES settings. As such, parental involvement may be higher in this sample than lower SES situations (Grolnick & Slowiaczek, 1994; Hill & Tyson, 2009). Accordingly, findings for this study may not be generalizable to youth from lower SES situations.

Given that previous studies have shown ethnic differences in externalizing behaviors (Deater-Deckard & Dodge, 1997; Deater-Deckard, Wang, Chen, & Bell, 2012; Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004; Miner & Clarke-Stewart, 2008), the lack of ethnic diversity in this sample reduces generalizability to ethnic minorities. Future studies would benefit from including representative samples as well as both community and clinical samples allowing for explicit tests as to whether the associations between cognitive distortions, cognitive autonomy, and externalizing behaviors are indeed different in these different populations.

An additional limitation may be the age range sampled. As stated previously, many researchers assert that cognitive autonomy is not fully developed until late adolescence (Chein et al., 2011; Steinberg, 2008, 2010). Cognitive autonomy should be less developed in 10- to 14-year-olds than youth that are 16 to 17 years old. In our society adolescents are considered adults at the age of 18; yet, as stated earlier, researchers maintain that the adolescent brain is not fully matured until the early to mid-twenties (Arain et al., 2013; Johnson et al., 2009). With this in mind, inclusion and analysis participants in early twenties could result in different relational outcomes.

In addition to sample limitations, there also were potential limitations associated with the measures of cognitive autonomy. The scales of evaluative thinking and decision-making were chosen as the focus of this study on conceptual grounds; however, comparative validation could have provided further insight into parent and peer influence. For example, this measure included the questions “I need family members to approve my decision” and “I need my views to match those of my friends.” Additionally, the dimensions of evaluative thinking and decision-making also were moderately correlated,

which could explain why similar results were found for both dimensions. Comparative validation was weakly negatively correlated with evaluative thinking and decision-making, which may have produced different outcomes. Future studies should include the dimension of comparative validation in analyses.

The measure indexing cognitive distortions also had limitations. All sub-dimensions of cognitive distortions were highly correlated. Appropriately, results from the regression analyses for the various cognitive distortion variables all had similar results, suggesting that these indices may have not reflected completely independent constructs. Future work would benefit from examining the contribution of all four distortion variables simultaneously in order to determine which dimensions are most strongly related to externalizing behaviors. Another limitation was that all measures were obtained from a single self-reporter. Self-report measures rely on honesty in reporting, but when revealing negative behaviors, participants may not report honestly to preserve self-image. This concern may be even greater in a population that likely engages in mechanisms of moral disengagement on a more frequent basis than normal populations. Individuals in this population may engage these mechanisms unknowingly during reporting, resulting in self-report bias that celebrates strengths and downplays externalizing behaviors. Self-report measures also rely on participants' ability to introspect, which may be more difficult for adolescents (Austin, Deary, Gibson, McGregor, & Dent, 1998; Fan et al., 2006). Finally, the data used in this study were cross-sectional. Tracking changes, after discharge from the facility, in cognitive autonomy and cognitive distortions may provide insight into this relationship, and how changes relate to changes in externalizing behaviors.

Despite these limitations, cognitive distortions were found to be more strongly related to externalizing behaviors than cognitive autonomy. Appropriately, practitioners' focus on correcting and/or decreasing cognitive distortions are likely to result in greater changes in externalizing behaviors, than focus on evaluative thinking or decision-making. Previous studies have not examined these constructs concurrently or have only examined clinical or nonclinical populations separately. Such studies would provide greater understanding to contributions to externalizing behaviors as well as provide practitioners insight into areas that result in improved treatment outcomes.

## REFERENCES

- Achenbach, T. M. (1991a). *Manual for the child behavior checklist/4-18 and 1991 profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M. (1991b). *Manual for the Youth Self-Report (YSR)*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M. (1998). Diagnosis, assessment, taxonomy, and case formulations. In W. Damon (Ed.), *Handbook of child psychopathology* (5th ed., pp. 63–87). New York, NY: Wiley.
- Achenbach, T. M. (2001). Youth self-report for ages 11-18. Burlington, VT: ASEBA.
- Achenbach, T. M., Dumenci, L., & Rescorla, L. A. (2002). Ten-Year Comparisons of Problems and Competencies for National Samples of Youth: Self, Parent, and Teacher Reports. *Journal of Emotional and Behavioral Disorders, 10*(4), 194–203. <https://doi.org/10.1177/10634266020100040101>
- Achenbach, T. M., & Edelbrock, C. S. (1978). The classification of child psychopathology: A review and analysis of empirical efforts. *Psychological Bulletin, 85*(6), 1275–1301. <https://doi.org/10.1037/0033-2909.85.6.1275>
- Achenbach, T. M., & Rescorla, L. A. (2001a). *ASEBA School-Age Forms & Profiles*. Burlington, VT: ASEBA.
- Achenbach, T. M., & Rescorla, L. A. (2001b). *Reliability, Internal Consistency, Cross-Informant Agreement, and Stability. ASEBA School -Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, &

Families.

- Allen, J. P., Hauser, S. T., Bell, K. L., & O'Connor, T. G. (1994). Longitudinal Assessment of Autonomy and Relatedness in Adolescent-Family Interactions as Predictors of Adolescent Ego Development and Self-Esteem. *Child Development*, 65(1), 179–194. <https://doi.org/10.1111/j.1467-8624.1994.tb00743.x>
- American Psychological Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington D.C.
- Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., Sandhu, R., Sharma, S. (2013). Maturation of the adolescent brain. *Neuropsychiatric Disease and Treatment*, 9, 449–61. <https://doi.org/10.2147/NDT.S39776>
- Archer, J., & Côté, S. M. (2005). Sex Differences in Aggressive Behavior: A Developmental and Evolutionary Perspective. In R. E. Tremblay, W. W. Hartup, & J. Archer (Eds.), *Developmental origins of aggression* (1st ed., pp. 425–443). New York, NY: Guilford Press.
- Austin, E. J., Deary, I. J., Gibson, G. J., McGregor, M. J., & Dent, J. B. (1998). Individual response spread in self-report scales: Personality correlations and consequences. *Personality and Individual Differences*, 24(3), 421–438. [https://doi.org/10.1016/S0191-8869\(97\)00175-X](https://doi.org/10.1016/S0191-8869(97)00175-X)
- Bacchini, D., De Angelis, G., Affuso, G., & Brugman, D. (2016). The Structure of Self-Serving Cognitive Distortions: A Validation of the “How I Think” Questionnaire in a Sample of Italian Adolescents. *Measurement and Evaluation in Counseling and Development*, 49(2). <https://doi.org/10.1177/0748175615596779>

- Bahr, S. J., Hoffmann, J. P., & Yang, X. (2005). Parental and peer influences on the risk of adolescent drug use. *Journal of Primary Prevention, 26*(6), 529–551.  
<https://doi.org/10.1007/s10935-005-0014-8>
- Baillargeon, R. H., Zoccolillo, M., Keenan, K., Côté, S., Pérusse, D., Wu, H.-X., ... Tremblay, R. E. (2007). Gender differences in physical aggression: A prospective population-based survey of children before and after 2 years of age. *Developmental Psychology, 43*(1), 13–26. <https://doi.org/10.1037/0012-1649.43.1.13>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1989). Social cognitive theory. In *Annals of child development* (Vol. 6, pp. 1–60). Greenwich, CT: JAI Press.
- Bandura, A. (1991). Social cognitive theory of moral thought and action. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Handbook of moral behavior and development* (Vol. 1, pp. 45–103). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*(1), 1–26. <https://doi.org/10.1146/annurev.psych.52.1.1>
- Barriga, A. Q., & Gibbs, J. C. (1996). Measuring cognitive distortion in antisocial youth: Development and preliminary validation of the “How I Think” questionnaire. *Aggressive Behavior, 22*(5), 333–343. [https://doi.org/10.1002/\(SICI\)1098-2337\(1996\)22:5<333::AID-AB2>3.0.CO;2-K](https://doi.org/10.1002/(SICI)1098-2337(1996)22:5<333::AID-AB2>3.0.CO;2-K)
- Barriga, A. Q., Gibbs, J. C., Potter, G. B., & Liau, A. K. (2001). How I Think (HIT)

Questionnaire Manual. Champaign, IL: Research Press.

- Barriga, A. Q., Hawkins, M. A., & Camelia, C. R. T. (2008). Specificity of cognitive distortions to antisocial behaviours. *Criminal Behaviour and Mental Health, 18*(2), 104–116. <https://doi.org/10.1002/cbm.683>
- Barriga, A. Q., Landau, J. R., Stinson II, B. L., Liao, A. K., & Gibbs, J. C. (2000). Cognitive distortions and problem behaviors in adolescents. *Criminal Justice & Behavior, 27*(1), 36–56. <https://doi.org/10.1177/07399863870092005>
- Barriga, A. Q., Morrison, E. M., Liao, A. K., & Gibbs, J. C. (2001). Moral cognition: Explaining the gender difference in antisocial behavior. *Merrill-Palmer Quarterly, 47*(4), 532–562. <https://doi.org/10.1353/mpq.2001.0020>
- Barriga, A. Q., Sullivan-Cosetti, M., & Gibbs, J. C. (2009). Moral cognitive correlates of empathy in juvenile delinquents. *Criminal Behaviour and Mental Health, 19*(4), 253–264. <https://doi.org/10.1002/cbm.740>
- Beckert, T. E. (2005). Fostering autonomy in adolescents: A model of cognitive autonomy and self-evaluation. In *The American Association of Behavioral and Social Sciences*. Las Vegas.
- Beckert, T. E. (2007). Cognitive Autonomy and Self-Evaluation in Adolescence: A Conceptual Investigation and Instrument Development. *North American Journal of Psychology, 9*(3), 579–594.
- Beckert, T. E. (2012). Autonomy and Its Assessment. In R. J. R. Levesque (Ed.), *Encyclopedia of Adolescence* (pp. 241–247). New York, NY: Springer New York.

<https://doi.org/10.1007/978-1-4419-1695-2>

- Beckert, T. E., Lee, C.-T., & Vaterlaus, J. M. (2012). Cognitive autonomy in adolescence : A cross-cultural comparison of American and Taiwanese high school students. *Survey Research-Method and Application*, (28), 7–45. Retrieved from [https://www.researchgate.net/profile/Troy\\_Beckert/publication/265725991\\_Differences\\_in\\_Adolescent\\_Cognitive\\_Autonomy\\_with\\_Caucasians\\_and\\_Taiwanese/links/56041a5c08ae5e8e3f2fcbf2.pdf](https://www.researchgate.net/profile/Troy_Beckert/publication/265725991_Differences_in_Adolescent_Cognitive_Autonomy_with_Caucasians_and_Taiwanese/links/56041a5c08ae5e8e3f2fcbf2.pdf)
- Bradley, R. A. (2007). Parenting in the breach: How parents help children cope with developmentally challenging circumstances. *Parenting*, 7(2), 99–148. <https://doi.org/10.1080/15295190701306896>
- Brame, B., Nagin, D. S., & Tremblay, R. E. (2001). Developmental trajectories of physical aggression from school entry to late adolescence. *Journal of Child Psychology and Psychiatry*, 42(04), 503–512. <https://doi.org/10.1111/1469-7610.00744>
- Brazão, N., da Motta, C., Rijo, D., Salvador, M. do C., Pinto-Gouveia, J., & Ramos, J. (2015). Clinical change in cognitive distortions and core schemas after a cognitive-behavioral group intervention: Preliminary findings from a randomized trial with male prison inmates. *Cognitive Therapy and Research*, 39(5), 578–589. <https://doi.org/10.1007/s10608-015-9693-5>
- Broidy, L. M., Nagin, D. S., Tremblay, R. E., Bates, J. E., Brame, B., Dodge, K. A., ... Vitaro, F. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*,

39(2), 222–245. <https://doi.org/10.1037/0012-1649.39.2.222>

- Brotman, L. M., Calzada, E., Huang, K.-Y., Kingston, S., Dawson-McClure, S., Kamboukos, D., ... Petkova, E. (2011). Promoting effective parenting practices and preventing child behavior problems in school among ethnically diverse families from underserved, urban communities. *Child Development, 82*(1), 258–276. <https://doi.org/10.1111/j.1467-8624.2010.01554.x>
- Capaldi, D. M., & Stollmiller, M. (1999). Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: III. Prediction to young-adult adjustment. *Development and Psychopathology, 11*(1), S0954579499001959. <https://doi.org/10.1017/S0954579499001959>
- Casey, B. J., Galvan, A., & Hare, T. a. (2005). Changes in cerebral functional organization during cognitive development. *Current Opinion in Neurobiology, 15*(2), 239–244. <https://doi.org/10.1016/j.conb.2005.03.012>
- Casey, B. J., Getz, S., & Galvan, A. (2008). The adolescent brain. *Developmental Review, 28*(1), 62–77. <https://doi.org/10.1016/j.dr.2007.08.003>
- Chabrol, H., Goutaudier, N., Melioli, T., van Leeuwen, N., & Gibbs, J. C. (2014). Impact of antisocial behavior on psychopathic traits in a community sample of adolescents. *Bulletin of the Menninger Clinic, 78*(3), 228–242. <https://doi.org/10.1521/bumc.2014.78.3.228>
- Chassin, L., Presson, C. C., Sherman, S. J., Montello, D., & McGrew, J. (1986). Changes in peer and parent influence during adolescence: Longitudinal versus cross-sectional perspectives on smoking initiation. *Developmental Psychology, 22*(3), 327–334.

<https://doi.org/10.1037/0012-1649.22.3.327>

- Chein, J., Albert, D., O'Brien, L., Uckert, K., & Steinberg, L. (2011). Peers increase adolescent risk taking by enhancing activity in the brain's reward circuitry. *Developmental Science, 14*(2), F1–F10. <https://doi.org/10.1111/j.1467-7687.2010.01035.x>
- Choon, L. J., Hasbullah, M., Ahmad, S., & Ling, W. S. (2013). Parental attachment, peer attachment, and delinquency among adolescents in Selangor, Malaysia. *Asian Social Science, 9*(15), 214–219. <https://doi.org/10.5539/ass.v9n15p214>
- Cleverley, K., Szatmari, P., Vaillancourt, T., Boyle, M., & Lipman, E. (2012). Developmental trajectories of physical and indirect aggression from late childhood to adolescence: Sex differences and outcomes in emerging adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*(10), 1037–1051. <https://doi.org/10.1016/j.jaac.2012.07.010>
- Cohen, G. L., & Prinstein, M. J. (2006). Peer contagion of aggression and health risk behavior among adolescent males: An experimental investigation of effects on public conduct and private attitudes. *Child Development, 77*(4), 967–983. <https://doi.org/10.1111/j.1467-8624.2006.00913.x>
- Côté, S. M. (2007). Sex Differences in Physical and Indirect Aggression: A Developmental Perspective. *European Journal on Criminal Policy and Research, 13*(3–4), 183–200. <https://doi.org/10.1007/s10610-007-9046-3>
- Côté, S. M., Vaillancourt, T., Barker, E. D., Nagin, D., & Tremblay, R. E. (2007). The joint development of physical and indirect aggression: Predictors of continuity and

change during childhood. *Development and Psychopathology*, 19(1), 37–55.

<https://doi.org/10.1017/S0954579407070034>

Côté, S. M., Vaillancourt, T., LeBlanc, J. C., Nagin, D. S., & Tremblay, R. E. (2006).

The development of physical aggression from toddlerhood to pre-adolescence: A nation wide longitudinal study of Canadian children. *Journal of Abnormal Child Psychology*, 34(1), 71–85. <https://doi.org/10.1007/s10802-005-9001-z>

Crick, N. R., & Dodge, K. A. (1996). Social Information-Processing Mechanisms in Reactive and Proactive Aggression. *Child Development*, 67(3), 993–1002.

<https://doi.org/10.1111/j.1467-8624.1996.tb01778.x>

Crick, N. R., Grotpeter, J. K., & Bigbee, M. A. (2002). Relationally and physically aggressive children's intent attributions and feelings of distress for relational and instrumental peer provocations. *Child Development*, 73(4), 1134–1142.

<https://doi.org/10.1111/1467-8624.00462>

Crick, N. R., Ostrov, J. M., & Werner, N. E. (2006). A longitudinal study of relational aggression, physical aggression, and children's social-psychological adjustment.

*Journal of Abnormal Child Psychology*, 34(2), 131–142.

<https://doi.org/10.1007/s10802-005-9009-4>

Crowley, T. J., Dalwani, M. S., Mikulich-Gilbertson, S. K., Young, S. E., Sakai, J. T.,

Raymond, K. M., ... Banich, M. T. (2015). Adolescents' Neural Processing of Risky Decisions: Effects of Sex and Behavioral Disinhibition. *PLOS ONE*, 10(7),

e0132322. <https://doi.org/10.1371/journal.pone.0132322>

Cutler, T. (2014). *Adolescent Self-Described Volume of Texting: Discovering*

*Relationships with Psychosocial Development and Interpersonal Relationships.*

Utah State University. Retrieved from <http://digitalcommons.usu.edu/etd/3696>

Davis, E. M. (2010). Summary for Policymakers. In Intergovernmental Panel on Climate Change (Ed.), *Climate Change 2013 - The Physical Science Basis* (pp. 1–30).

Cambridge, UK: Cambridge University Press.

<https://doi.org/10.1017/CBO9781107415324.004>

Deater-Deckard, K., & Dodge, K. A. (1997). Externalizing behavior problems and discipline revisited: nonlinear effects and variation by culture, context, and gender.

*Psychological Inquiry*, 8(3), 161–175. <https://doi.org/10.1207/s15327965pli0803>

Deater-Deckard, K., Wang, Z., Chen, N., & Bell, M. A. (2012). Maternal executive function, harsh parenting, and child conduct problems. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 53(10), 1084–1091.

<https://doi.org/10.1111/j.1469-7610.2012.02582.x>

Di Giunta, L., Pastorelli, C., Eisenberg, N., Gerbino, M., Castellani, V., & Bombi, A. S.

(2010). Developmental trajectories of physical aggression: prediction of overt and covert antisocial behaviors from self- and mothers' reports. *European Child and Adolescent Psychiatry*, 1–10. <https://doi.org/10.1007/s00787-010-0134-4>

<https://doi.org/10.1007/s00787-010-0134-4>

Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, 53(6), 1146–1158. <https://doi.org/10.1037/0022-3514.53.6.1146>

<https://doi.org/10.1037/0022-3514.53.6.1146>

Drabick, D. a G., Beauchaine, T. P., Gadow, K. D., Carlson, G. a, & Bromet, E. J. (2006).

Risk factors for conduct problems and depressive symptoms in a cohort of Ukrainian

children. *Journal of Clinical Child and Adolescent Psychology : The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, 35(2), 244–52.

[https://doi.org/10.1207/s15374424jccp3502\\_8](https://doi.org/10.1207/s15374424jccp3502_8)

Ebesutani, C., Bernstein, A., Martinez, J. I., Chorpita, B. F., & Weisz, J. R. (2011). The

Youth Self Report : Applicability and validity across younger and older youths.

*Journal of Clinical Child & Adolescent Psychology*, 40(2), 338–346.

<https://doi.org/10.1080/15374416.2011.546041>

Eddin, J. P. (2010). Psychosocial development, well-being, and internalizing symptoms

during emerging adulthood: An examination of mediating and moderating factors.

*ProQuest Dissertations and Theses*, 194. Retrieved from

[http://search.proquest.com/docview/756742425?accountid=14553%5Cnhttp://openurl.library.uiuc.edu/sfxlcl3?url\\_ver=Z39.88-](http://search.proquest.com/docview/756742425?accountid=14553%5Cnhttp://openurl.library.uiuc.edu/sfxlcl3?url_ver=Z39.88-)

2004&rft\_val\_fmt=info:ofi/fmt:kev:mtx:dissertation&genre=dissertations+&+theses

&sid=ProQ:ProQuest+Dissertations+&+Theses+Full+Text&atit

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of

emotion. *Psychological Inquiry*, 9(4), 241–273.

[https://doi.org/10.1207/s15327965pli0904\\_1](https://doi.org/10.1207/s15327965pli0904_1)

Erikson, E. H. (1967). Memorandum on youth. *Daedalus*, 96(3), 860–870. Retrieved

from <http://www.jstor.org/stable/20027079>

Fan, X., Miller, B. C., Park, K.-E., Winward, B. W., Christensen, M., Grotevant, H. D., &

Tai, R. H. (2006). An exploratory study about inaccuracy and invalidity in

adolescent self-report surveys. *Field Methods*, 18(3), 223–244.

<https://doi.org/10.1177/152822X06289161>

Frank, S. J., Avery, C. B., & Laman, M. S. (1988). Young adults' perceptions of their relationships with their parents: Individual differences in connectedness, competence, and emotional autonomy. *Developmental Psychology*, 24(5), 729–737.

<https://doi.org/10.1037/0012-1649.24.5.729>

Frick, P. J., & White, S. F. (2008). Research review: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry and Allied Disciplines*.

<https://doi.org/10.1111/j.1469-7610.2007.01862.x>

Gini, G., Pozzoli, T., & Hymel, S. (2014). Moral disengagement among children and youth: A meta-analytic review of links to aggressive behavior. *Aggressive Behavior*, 40(1), 56–68. <https://doi.org/10.1002/ab.21502>

Goldstein, S. E. (2016). Adolescents' Disclosure and Secrecy About Peer Behavior: Links with Cyber Aggression, Relational Aggression, and Overt Aggression. *Journal of Child and Family Studies*, 25(5), 1430–1440.

<https://doi.org/10.1007/s10826-015-0340-2>

Grolnick, W. S., & Slowiaczek, M. L. (1994). Parents' involvement in children's schooling: A multidimensional conceptualization and motivational model. *Child Development*, 65(1), 237–252. <https://doi.org/10.1111/j.1467-8624.1994.tb00747.x>

Grotper, J. K., & Crick, N. R. (1996). Relational aggression, overt aggression, and friendship. *Child Development*, 67(5), 2328–2338. <https://doi.org/10.1111/j.1467->

8624.1996.tb01860.x

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). Multivariate Data Analysis. *International Journal of Pharmaceutics*, *1*(6), 816.

Harris-McKoy, D., & Cui, M. (2013). Parental control, adolescent delinquency, and young adult criminal behavior. *Journal of Child and Family Studies*, *22*(6), 836–843. <https://doi.org/10.1007/s10826-012-9641-x>

Heilbron, N., & Prinstein, M. J. (2008). A review and reconceptualization of social aggression: Adaptive and maladaptive correlates. *Clinical Child and Family Psychology Review*, *11*(4), 176–217. <https://doi.org/10.1007/s10567-008-0037-9>

Hill, N. E., Castellino, D. R., Lansford, J. E., Nowlin, P., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2004). Parent academic involvement as related to school behavior, achievement, and aspirations: Demographic variations across adolescence. *Child Development*, *75*(5), 1491–1509. <https://doi.org/10.1111/j.1467-8624.2004.00753.x>

Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology*, *45*(3), 740–763. <https://doi.org/10.1037/a0015362>

Holmes, M. R., Yoon, S., & Berg, K. A. (2017). Maternal depression and intimate partner violence exposure: Longitudinal analyses of the development of aggressive behavior in an at-risk sample. *Aggressive Behavior*, *9999*(May 2016), 1–11. <https://doi.org/10.1002/ab.21696>

Hoogsteder, L. M., Wissink, I. B., Stams, G. J. J. M., van Horn, J. E., & Hendriks, J.

(2014). A validation study of the brief irrational thoughts inventory. *Journal of Rational - Emotive and Cognitive - Behavior Therapy*, 32(3), 216–232.

<https://doi.org/10.1007/s10942-014-0190-7>

Huang, J.-F., Wong, R.-H., Chen, C.-C., Mao, I.-F., Huang, C.-C., Chang, W.-H., & Wang, L. (2011). Trajectory of depression symptoms and related factors in later life — A population based study. *Journal of Affective Disorders*, 133(3), 499–508.

<https://doi.org/10.1016/j.jad.2011.04.048>

Ivanova, M. Y., Achenbach, T. M., Rescorla, L. A., Dumenci, L., Almqvist, F., Bilenberg, N., ... Verhulst, F. C. (2007). The generalizability of the Youth Self-Report syndrome structure in 23 societies. *Journal of Consulting and Clinical Psychology*, 75(5), 729–738. <https://doi.org/10.1037/0022-006X.75.5.729>

Izutsu, T., Tsutsumi, A., Islam, A., Firoz, A. H. M., Wakai, S., & Kurita, H. (2005). Reliability and validity of the Youth Self-Report, Bangladesh version. *International Journal of Methods in Psychiatric Research*, 14(4), 212–220.

<https://doi.org/10.1002/mpr.9>

Jennings, W. G., & Reingle, J. M. (2012). On the number and shape of developmental/life-course violence, aggression, and delinquency trajectories: A state-of-the-art review. *Journal of Criminal Justice*, 40(6), 472–489.

<https://doi.org/10.1016/j.jcrimjus.2012.07.001>

Johnson, S. B., Blum, R. W., & Giedd, J. N. (2009). Adolescent Maturity and the Brain: The Promise and Pitfalls of Neuroscience Research in Adolescent Health Policy.

*Journal of Adolescent Health*, 45(3), 216–221.

<https://doi.org/10.1016/j.jadohealth.2009.05.016>

Juvonen, J., & Ho, A. Y. (2008). Social motives underlying antisocial behavior across middle school grades. *Journal of Youth and Adolescence*, *37*(6), 747–756.

<https://doi.org/10.1007/s10964-008-9272-0>

Kim, I. J., Ge, X., Brody, G. H., Conger, R. D., Gibbons, F. X., & Simons, R. L. (2003).

Parenting behaviors and the occurrence and co-occurrence of depressive symptoms and conduct problems among african american children. *Journal of Family*

*Psychology*, *17*(4), 571–583. <https://doi.org/10.1037/0893-3200.17.4.571>

Lafko, N. L. (2015). *Susceptibility to peer influence for engagement in relational*

*aggression and prosocial behavior: The roles of popular peers, stress physiology,*

*and gender. ProQuest Dissertations and Theses.* Retrieved from

<http://flagship.luc.edu/login?url=http://search.proquest.com/docview/1707177707?accountid=12163%5Cnhttp://loyola->

[primodiscovery.luc.edu/primodiscovery/openurl/01LUC/01LUC\\_SERVICES?genre=dissertations+%26+theses&issn=&title=Susceptibility+to+peer+influence+for+en](http://primodiscovery.luc.edu/primodiscovery/openurl/01LUC/01LUC_SERVICES?genre=dissertations+%26+theses&issn=&title=Susceptibility+to+peer+influence+for+en)

Lansford, J. E., Deater-Deckard, K., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2004).

Ethnic differences in the link between physical discipline and later adolescent externalizing behaviors. *Journal of Child Psychology and Psychiatry and Allied*

*Disciplines*, *45*(4), 801–812. <https://doi.org/10.1111/j.1469-7610.2004.00273.x>

Lardén, M., Melin, L., Holst, U., & Långström, N. (2006). Moral judgement, cognitive

distortions and empathy in incarcerated delinquent and community control

adolescents. *Psychology, Crime & Law*, *12*(5), 453–462.

<https://doi.org/10.1080/10683160500036855>

Lee, C.-T., & Beckert, T. E. (2012). Taiwanese adolescent cognitive autonomy and identity development: The relationship of situational and agential factors.

*International Journal of Psychology*, 47(1), 39–50.

<https://doi.org/10.1080/00207594.2011.572972>

Lee, C.-T., Beckert, T. E., & Goodrich, T. R. (2010). The relationship between individualistic, collectivistic, and transitional cultural value orientations and adolescents' autonomy and identity status. *Journal of Youth and Adolescence*, 39(8),

882–893. <https://doi.org/10.1007/s10964-009-9430-z>

Leung, P. W. L., Kwong, S. L., Tang, C. P., Ho, T. P., Hung, S. F., Lee, C. C., ... Liu, W.

S. (2006). Test-retest reliability and criterion validity of the Chinese version of CBCL, TRF, and YSR. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 47(9), 970–973. <https://doi.org/10.1111/j.1469-7610.2005.01570.x>

Liu, J. (2004). Childhood Externalizing Behavior: Theory and Implications. *Journal of Child and Adolescent Psychiatric Nursing*, 17(3), 93–103.

<https://doi.org/10.1111/j.1744-6171.2004.tb00003.x>

Margalit, D., & Ben-Ari, A. (2014). The effect of wilderness therapy on adolescents' cognitive autonomy and self-efficacy: Results of a non-randomized trial. *Child &*

*Youth Care Forum*, 43(2), 181–194. <https://doi.org/10.1007/s10566-013-9234-x>

Markus, H. (1987). The Dynamic Self-Concept: A Social Psychological Perspective.

*Annual Review of Psychology*, 38(1), 299–337.

<https://doi.org/10.1146/annurev.psych.38.1.299>

- Mathieson, L. C., & Crick, N. R. (2010). Reactive and proactive subtypes of relational and concurrent and longitudinal adjustment. *School Psychology Review, 39*(4), 601–611.
- McConaughy, S. H. (1993). Evaluating behavioral and emotional disorders with the CBCL, TRF, and YSR cross-informant scales. *Journal of Emotional & Behavioral Disorders, 1*(1), 40. <https://doi.org/10.1177/106342669300100107>
- Miner, J. L., & Clarke-Stewart, K. A. (2008). Trajectories of externalizing behavior from age 2 to age 9: Relations with gender, temperament, ethnicity, parenting, and rater. *Developmental Psychology, 44*(3), 771–786. <https://doi.org/10.1037/0012-1649.44.3.771>
- Moffitt, T. E. (2003). Life-course-persistent and adolescence-limited antisocial behavior: A 10-year research review and a research agenda. In B. B. Lahey, T. E. Moffitt, & A. Caspi (Eds.), *Causes of conduct disorder and juvenile delinquency* (pp. 49–75). New York, NY: Guilford Press.
- Moffitt, T. E. (2007). A review of research on the taxonomy of life-course persistent versus adolescence-limited antisocial behavior. In D. J. Flannery, A. T. Vazsonyi, & I. D. Waldman (Eds.), *The Cambridge Handbook of Violent Behavior and Aggression* (pp. 49–74). Cambridge University Press.
- Moore, M. J., Nakano, T., Enomoto, A., & Suda, T. (2012). Anonymity and roles associated with aggressive posts in an online forum. *Computers in Human Behavior, 28*(3), 861–867. <https://doi.org/10.1016/j.chb.2011.12.005>
- Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role

- of the family context in the development of emotion regulation. *Social Development*, *16*(2), 361–388. <https://doi.org/10.1111/j.1467-9507.2007.00389.x>
- Murray-Close, D., & Ostrov, J. M. (2009). A longitudinal study of forms and functions of aggressive behavior in early childhood. *Child Development*, *80*(3), 828–842. <https://doi.org/10.1111/j.1467-8624.2009.01300.x>
- Nakamura, B. J., Ebesutani, C., Bernstein, A., & Chorpita, B. F. (2009). A psychometric analysis of the child behavior checklist DSM-oriented scales. *Journal of Psychopathology and Behavioral Assessment*, *31*(3), 178–189. <https://doi.org/10.1007/s10862-008-9119-8>
- Nas, C. N., Brugman, D., & Koops, W. (2008). Measuring self-serving cognitive distortions with the “How I Think” questionnaire. *European Journal of Psychological Assessment*, *24*(3), 181–189. <https://doi.org/10.1027/1015-5759.24.3.181>
- Noom, M. J., Deković, M., & Meeus, W. (2001). Conceptual analysis and measurement of adolescent autonomy. *Journal of Youth and Adolescence*, *30*(5), 577–595. <https://doi.org/10.1023/A:1010400721676>
- Pavlova, M. K., Haase, C. M., & Silbereisen, R. K. (2011). Early, on-time, and late behavioural autonomy in adolescence: Psychosocial correlates in young and middle adulthood. *Journal of Adolescence*, *34*(2), 361–370. <https://doi.org/10.1016/j.adolescence.2010.04.002>
- Peña Fernández, M. E., Andreu Rodríguez, J. M., Barriga, A. Q., & Gibbs, J. C. (2013). Psychometrical properties of the “How I Think” Questionnaire (HIT-Q) in

- adolescents. *Psicothema*, 25(4), 542–8. <https://doi.org/10.7334/psicothema2013.38>
- Plante, N., Daigle, M. S., Gaumont, C., Charbonneau, L., Gibbs, J., & Barriga, A. Q. (2012). Validation of the ‘How I Think Questionnaire’ in a population of french-speaking adolescents with externalizing behaviors. *Behavioral Sciences & the Law*, 30(2), 196–210. <https://doi.org/10.1002/bsl.2001>
- Prinstein, M. J., & Cillessen, A. H. (2003). Forms and functions of adolescent peer aggression associated with high levels of peer status. *Merrill-Palmer Quarterly*, 49(3), 310–342. <https://doi.org/10.1353/mpq.2003.0015>
- Reiser, M. L. (2007). *A Comparison of Cognitive Autonomy in Adolescents From a Residential Treatment Center and A Traditional Public High School*. Utah State University. Retrieved from <https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=3591&context=etd>
- Rescorla, L. A., Ginzburg, S., Achenbach, T. M., Ivanova, M. Y., Almqvist, F., Begovac, I., ... Verhulst, F. C. (2013). Cross-informant agreement between parent-reported and adolescent self-reported problems in 25 societies. *Journal of Clinical Child & Adolescent Psychology*, 42(2), 262–273. <https://doi.org/10.1080/15374416.2012.717870>
- Rezaul Karim, A. K. M., & Begum, T. (2016). The How I Think questionnaire: Assessing its psychometric properties in Bangladeshi culture. *Asian Journal of Psychiatry*, 21, 9–16. <https://doi.org/10.1016/j.ajp.2016.02.004>
- Rose, A. J., Swenson, L. P., & Waller, E. M. (2004). Overt and relational aggression and perceived popularity: developmental differences in concurrent and prospective

relations. *Developmental Psychology*, 40(3), 378–87. <https://doi.org/10.1037/0012-1649.40.3.378>

Sander, J. B., DeBoth, K., & Ollendick, T. H. (2015). Internalizing Behaviors. In M. K. Holt & A. E. Grills (Eds.), *Critical Issues in School-based Mental Health: Evidence-based Research, Practice, and Interventions* (pp. 18–28). Routledge.

Simons-Morton, B., Haynie, D. L., Crump, A. D., Eitel, P., & Saylor, K. E. (2001). Peer and parent influences on smoking and drinking among early adolescents. *Health Education & Behavior*, 28(1), 95–107.

<https://doi.org/10.1177/109019810102800109>

Smetana, J. G., Campione-Barr, N., & Daddis, C. (2004). Longitudinal development of family decision making: Defining healthy behavioral autonomy for middle-class African American adolescents. *Child Development*, 75(5), 1418–1434.

<https://doi.org/10.1111/j.1467-8624.2004.00749.x>

Steinberg, L. (2004). Risk taking in adolescence: What changes, and why? *Annals of the New York Academy of Sciences*, 1021(1), 51–58.

<https://doi.org/10.1196/annals.1308.005>

Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking.

*Developmental Review*, 28(1), 78–106. <https://doi.org/10.1016/j.dr.2007.08.002>

Steinberg, L. (2010). A behavioral scientist looks at the science of adolescent brain development. *Brain and Cognition*, 72(1), 160–164.

<https://doi.org/10.1016/j.bandc.2009.11.003>

Steinberg, L. (2011). Demystifying the adolescent brain. *Educational Leadership*, 68(7), 41–46.

Steinberg, L., Albert, D., Cauffman, E., Banich, M., Graham, S., & Woolard, J. (2008). Age differences in sensation seeking and impulsivity as indexed by behavior and self-report: Evidence for a dual systems model. *Developmental Psychology*, 44(6), 1764–1778. <https://doi.org/10.1037/a0012955>

Steinberg, L., & Silverberg, S. B. (1989). The vicissitudes of autonomy in early adolescence. *Child Development*, 57(4), 841–851. Retrieved from <http://www.jstor.org/stable/1130361>

ten Cate, A. (2011). *Cognitive distortions as predictor of antisocial behaviour in children*. Utrecht University. Retrieved from <https://dspace.library.uu.nl/bitstream/handle/1874/206408/cateten8612781.pdf?sequence=1>

Trad, P. V. (1994). Developmental previewing: Enhancing the adolescent's predictions of behavioral consequences. *Journal of Clinical Psychology*, 50(6), 814–829. Retrieved from <http://dist.lib.usu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=9501181162&site=ehost-live>

Tremblay, R. E., Nagin, D. S., Séguin, J. R., Zoccolillo, M., Zelazo, P. D., Boivin, M., ... Japel, C. (2004). Physical aggression during early childhood: Trajectories and predictors. *Pediatrics*, 114(1), e43–e50. <https://doi.org/10.1542/peds.114.1.e43>

Tsakpinoglou, F. (2017). Best friends' interactions and substance use: The role of friend

- pressure and unsupervised co-deviancy. *Journal of Adolescence*, 60, 74–82.  
<https://doi.org/10.1016/j.adolescence.2017.07.005>
- Vaillancourt, T., Miller, J. L., Fagbemi, J., Côté, S. M., & Tremblay, R. E. (2007). Trajectories and predictors of indirect aggression: results from a nationally representative longitudinal study of Canadian children aged 2–10. *Aggressive Behavior*, 33(4), 314–326. <https://doi.org/10.1002/ab.20202>
- van der Velden, F., Brugman, D., Boom, J., & Koops, W. (2010). Moral cognitive processes explaining antisocial behavior in young adolescents. *International Journal of Behavioral Development*, 34(4), 292–301.  
<https://doi.org/10.1177/0165025409343705>
- van Leeuwen, N., Chauchard, E., Chabrol, H., & Gibbs, J. C. (2013). Psychometric properties of the French version of the How I Think Questionnaire. *L'Encephale*, 39(6), 401–407. <https://doi.org/10.1016/j.encep.2012.10.013>
- van Leeuwen, N., Rodgers, R. F., Gibbs, J. C., & Chabrol, H. (2014). Callous-unemotional traits and antisocial behavior among adolescents: The role of self-serving cognitions. *Journal of Abnormal Child Psychology*, 42(2), 229–237.  
<https://doi.org/10.1007/s10802-013-9779-z>
- Wallinius, M., Johansson, P., Larden, M., & Dernevik, M. (2011). Self-serving cognitive distortions and antisocial behavior among adults and adolescents. *Criminal Justice and Behavior*, 38(3), 286–301. <https://doi.org/10.1177/0093854810396139>
- Zimmer-Gembeck, M. J., & Collins, W. A. (2003). Autonomy development during adolescence. In G. R. Adams & M. D. Berzonsky (Eds.), *Blackwell Handbook of*

*Adolescence* (pp. 175–204). Malden, MA: Blackwell.

Zimmer-Gembeck, M. J., Madsen, S. D., & Hanisch, M. (2011). Connecting the intrapersonal to the interpersonal: Autonomy, voice, parents, and romantic relationships in emerging adulthood. *European Journal of Developmental Psychology*, 8(5), 509–525. <https://doi.org/10.1080/17405629.2011.567061>

## APPENDIX

**Research**

I understand that [REDACTED] is conducting an ongoing program evaluation to document student outcomes for continuous program improvement. In addition, West Ridge Academy is also interested in using this same data for possible future research purposes and may collaborate or consult with other researchers for this purpose. All data used will be anonymous to protect privacy; no personal, identifying information will be collected. This research has the potential to further our knowledge of adolescent development and effective strategies for intervention

Your permission to access this data is being requested below so that if the opportunity arises, research consultants will be able to access to the de-identified information needed to conduct future studies.

**Parents: Please initial one below**

\_\_\_\_\_ Yes, I agree to have my students' anonymous data included in research

\_\_\_\_\_ No, I do not give permission for my students' anonymous data to be included in research

\_\_\_\_\_  
Parent / Guardian Signature

DATE

**Youth Assent:** *(for those between the age of 7-17 years)***Please initial one below:**

\_\_\_\_\_ Yes, I agree to have my anonymous data included in future research.

\_\_\_\_\_ No, I do not give permission for my anonymous data to be included in future research.

\_\_\_\_\_  
Student Signature

DATE