

WHAT ARE THEY THINKING? COGNITIVE DISTORTIONS AND
ADOLESCENT EXTERNALIZING AND INTERNALIZING PROBLEMS

by

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ABSTRACT

Cognitive distortions have been linked to both externalizing and internalizing problems in children and adults, but very few studies have explicitly examined this link in a community-based sample of adolescents. The relation of self-debasing (cognitions which are inaccurate and debase the self) and self-serving (cognitions which protect an individual from self-censure) cognitive distortions to self- and teacher-reported internalizing, externalizing, and co-occurring problems was investigated. The sample consisted of 182 males and 207 females aged 12 to 17 years ($M = 14.29$, $SD = 1.01$). Externalizing and internalizing problems were measured using the Youth Self-Report (YSR) and Teacher's Report Form (TRF). Self-debasing distortions were measured using the Children's Negative Cognitive Error Questionnaire (CNCEQ), and self-serving distortions measured using the How I Think Questionnaire (HIT). A series of correlational analyses revealed that self-serving cognitive distortions were significantly associated with externalizing problems, and self-debasing cognitive distortions were significantly associated with internalizing problems. A unique statistical approach, the Relative Pratt Index (RPI; Thomas, Hughes, & Zumbo, 1998), was used in this study to measure the relative importance of predictor variables in a series of hierarchical regression analyses. The results of the hierarchical regression analyses and subsequent RPI indicated that self-serving and self-debasing cognitive distortions were the most important significant predictors, relative to the other variables in the model, of externalizing and internalizing problems, respectively. The specific self-serving cognitive distortions of assuming the worst, minimizing/mislabeling, and self-centered were found to be the most important significant predictors, relative to the other variables in the

model, of externalizing problems. The specific self-debasing cognitive distortions of overgeneralizing and catastrophizing were the most important significant predictors, relative to the other variables in the model, of internalizing problems. The results of this study revealed large associations and high specificity between cognitive distortions and internalizing, and externalizing problems in a sample of community-based adolescents. Implications of the findings for intervention and prevention are discussed.

TABLE OF CONTENTS

ABSTRACT	ii
TABLE OF CONTENTS.....	iv
LIST OF TABLES.....	ix
ACKNOWLEDGEMENTS.....	xi
CHAPTER 1. INTRODUCTION	1
Definitions.....	2
Externalizing and Internalizing Problems.....	2
Cognitive Distortions	4
Co-occurrence of Internalizing and Externalizing Problems.....	5
Empirically Based Assessment	7
Clinical Versus Nonclinical	9
Prevalence and Consequences of Externalizing, Internalizing, and Co- occurring Problems	10
Significance of the Study	11
Extending the Literature	14
CHAPTER 2. REVIEW OF THE LITERATURE	18
Influential Theories.....	20
Neutralization Theory	20
Yochelson and Samenow's Concept of Thinking Errors.....	22
Moral Disengagement.....	23
Theory of Self-serving Cognitive Distortions.....	27
Four-category Typology of Cognitive Distortions	28
Beck's Cognitive Theory	31
Diathesis-Stress Theory	31
Externalizing and Internalizing Problems.....	39
Prevalence of Externalizing and Internalizing Problems in Adolescents	41
Co-occurrence of Internalizing and Externalizing Problems.....	42
Empirical Support for Co-occurrence.....	44
Underlying Factors in Internalizing and Externalizing Problems.....	47

Gender Differences	48
Development of Internalizing and Externalizing Problems.....	50
Externalizing Problems.....	50
Internalizing Problems	51
Cognitive Distortions and Externalizing and Internalizing Problems	53
Externalizing Problems and Cognitive Distortions.....	53
Internalizing Problems and Cognitive Distortions.....	59
Specific Cognitive Distortions.....	62
Statement of Problem.....	69
Purpose.....	70
Cross-Informant Disagreement.....	71
Rationale	74
Primary Research Questions and Hypotheses.....	75
CHAPTER 3. METHOD	83
Participants.....	83
Procedures.....	85
Measures	89
Self-serving Cognitive Distortions	89
Self-debasing Cognitive Distortions.....	90
Internalizing and Externalizing Measures	91
Self-reported Internalizing and Externalizing Behaviour	92
Teacher-reported Internalizing and Externalizing Behaviour.....	93
Internalizing, Externalizing, and Co-occurrence Categorizing Criteria	94
Strategy for Categorizing Youth.....	95
CHAPTER 4. RESULTS	98
Preliminary Analyses.....	99
Data Screening.....	99
Missing Data	100
Testing Assumptions.....	103
Assessment of TRF Normality.....	103
Univariate and Multivariate Outliers	104
Univariate Outliers and the TRF	106

Descriptive Analyses	107
Age, Gender, and Ethnic Differences on YSR/TRF Internalizing and Externalizing.....	108
Analyses of Demographics and YSR Problems.....	109
Analyses of Demographics and TRF Problems.....	109
Age, Gender, and Ethnic Differences on Cognitive Distortions.....	110
Age, Gender, and Ethnic Differences on Self-Serving Distortions	110
Age, Gender, and Ethnic Differences on Self-debasing Distortions	111
Main Analyses	111
Research Questions and Plan of Analyses	111
Association of Cognitive Distortions to Internalizing and Externalizing Problems	112
Association of Cognitive Distortions to Youth Reported Problems.....	114
Within Age Group Associations	117
Association of Cognitive Distortions to Teacher-Reported Internalizing and Externalizing	119
Cognitive Distortions, Age, and Gender in the Prediction of Externalizing and Internalizing	123
Relative Pratt Index.....	123
Self-serving Cognitive Distortions and Self-reported Externalizing.....	124
Self-debasing Cognitive Distortions and Self-reported Internalizing.....	126
Differences in Cognitive Distortions Within and Between Problem Categories	134
Specific Cognitive Distortions, Age, and Gender in the Prediction of Externalizing and Internalizing.....	147
CHAPTER 5. DISCUSSION.....	157
Extending the Literature	157
Purpose of the Present Study	158
Associations Between Cognitive Distortions and Self-Reported Problems	159
Gender Differences	161
Age Differences	164
Specificity of Cognitive Distortions to Externalizing and Internalizing	166
General Cognitive Distortions and Internalizing, Externalizing Problems	167

Specific Cognitive Distortions and Within/Between Problem Category Differences.....	169
Gender Differences in Specific Cognitive Distortions and Self-Reported Problems	170
Specific Self-Serving Cognitive Distortions and Problem Categories	171
Specific Self-Debasing Cognitive Distortions and Problem Behaviours	173
Co-occurring Category and Cognitive Distortions	180
Specific Cognitive Distortions and Within Problem Category Differences	182
Relative Importance of Specific Self-Serving and Debasing Distortions to Psychopathology	185
Relative Importance of Specific Self-Serving Distortions.....	185
Relative Importance of Specific Self-Debasing Distortions	186
Teacher-Reported Internalizing and Externalizing Problems.....	189
Specificity of Self-Serving Cognitive Distortions to TRF Externalizing	190
Age Differences in Teacher-Reported Problems	192
Summary of the Current Study's Findings	195
Implications.....	199
Implications for Intervention and Prevention	200
Strengths of the Current Study.....	202
Limitations of the Current Study	203
Future Research	207
REFERENCES	211
APPENDIX A. Self-Reported Demographic Information Questionnaire.....	237
APPENDIX B. Parental Consent Form.....	240
APPENDIX C. Participant Assent Form.....	245
APPENDIX D. Participation Rates of Individual Schools.....	249
APPENDIX E. How I Think Questionnaire	250
APPENDIX F. The Children's Negative Cognitive Error Questionnaire	257
APPENDIX G. Youth Self-Report.....	263
APPENDIX H. Teacher's Report Form	268

APPENDIX I.	Means and Standard Deviations of Variables of Interest by Gender..	273
APPENDIX J.	Means and Standard Deviations of Variables of Interest by Age	274
APPENDIX K.	Selection Criteria for Problem Categories	275
APPENDIX L.	Mean Difference Between Study and Normative Data for YSR and TRF Internalizing and Externalizing Problems	276
APPENDIX M.	Mean Difference Among YSR and TRF Internalizing and Externalizing Problems	277
APPENDIX N.	Certificate of Ethics Approval.....	278

LIST OF TABLES

Table 1.	Mechanisms of Moral Disengagement	24
Table 2.	Examples of Moral Disengagement.....	25
Table 3.	Four-Category Typology of Self-serving Cognitive Distortions	29
Table 4.	Examples of Self-Serving Cognitive Distortions.....	30
Table 5.	Beck's Self-Debasing Cognitive Distortions	32
Table 6.	Examples of Self-debasing Cognitive Distortions	32
Table 7.	Family Composition of Grade Eight and Ten Participants.....	84
Table 8.	Ethnic Composition of Grade Eight and Ten Participants.....	84
Table 9.	Means and Standard Deviations of Variables of Interest.....	101
Table 10.	Sample Sizes of the Demographic Variables.....	108
Table 11.	Intercorrelations Among Self-Reported Internalizing and Externalizing Problems, and Cognitive Distortions for the Entire Sample.....	114
Table 12.	Intercorrelations Among Self-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Gender	116
Table 13.	Intercorrelations Among Self-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Age Group	117
Table 14.	Intercorrelations Among Teacher-Reported Internalizing and Externalizing Problems, and Cognitive Distortions for Entire Sample	119
Table 15.	Intercorrelations Among Teacher-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Gender.....	120
Table 16.	Intercorrelations Among Teacher-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Age Group.....	121
Table 17.	Summary of Hierarchical Regression Analysis for the HIT Questionnaire Predicting Self-Reported Externalizing Problems (N = 387).....	125
Table 18.	Final Model Hierarchical Regression Analysis for the HIT Questionnaire Predicting Self-Reported Externalizing Problems (N = 387).....	126
Table 19.	Summary of Hierarchical Regression Analysis for the CNCEQ Questionnaire Predicting Self-Reported Internalizing Problems (N = 387).....	128
Table 20.	Final Model Summary of Hierarchical Regression Analysis for the CNCEQ Questionnaire Predicting Self-Reported Internalizing Problems (N = 387).....	128

Table 21. Summary of Hierarchical Regression Analysis for the HIT Questionnaire Predicting Teacher-Reported Externalizing Problems ($N = 294$).....	130
Table 22. Final Model Hierarchical Regression Analysis for the HIT Questionnaire Predicting Teacher-Reported Externalizing Problems ($N = 294$).....	131
Table 23. Summary of Hierarchical Regression Analysis for the CNCEQ Questionnaire Predicting Teacher-Reported Internalizing Problems ($N = 294$).....	133
Table 24. Final Model Summary of Hierarchical Regression Analysis for the CNCEQ Questionnaire Predicting Teacher-Reported Internalizing Problems ($N = 294$).....	133
Table 26. Problem Categories Comparisons on Self-Serving Cognitive Distortions....	138
Table 27. Problem Categories Comparisons on Blaming others, Assuming the worst, and Age	140
Table 28. Problem Categories Comparisons on Self-Debasing Cognitive Distortions.....	142
Table 29. Summary of Hierarchical Regression Analysis for Variables Predicting Self-Reported Externalizing Problems ($N = 387$).....	149
Table 30. Summary of Hierarchical Regression Analysis for the Final Model Predicting Self-Reported Externalizing Problems ($N = 387$)	150
Table 31. Summary of Hierarchical Regression Analysis for Variables Predicting Self-Reported Internalizing Problems ($N = 387$).....	151
Table 32. Summary of Hierarchical Regression Analysis for the Final Model Predicting Self-Reported Internalizing Problems ($N = 387$)	152
Table 33. Summary of Hierarchical Regression Analysis for Variables Predicting Teacher-Reported Externalizing Problems ($N = 294$)	153
Table 34. Summary of Hierarchical Regression Analysis for Variables Predicting Teacher-Reported Internalizing Problems ($N = 294$).....	154

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CHAPTER 1

INTRODUCTION

Adolescence is viewed as a time of stress and inner turmoil (Arnett, 1999). This view can be traced to the work of G. S. Hall (1904) and his description of adolescent “strum und drang” (Arnett, 1999). Over a century after Hall’s contributions to the study of adolescent development, the perception of the adolescent as struggling with hormones, moods, and identity seems to be perpetuated, in part, by anecdotal evidence and popular media such as television and movies (Achenbach, Dumenci, & Rescorla, 2002). What seems to be closer to reality is that adolescent “strum und drang” is not a universal occurrence as once thought, but based on individual differences (Steinberg, 2001). Yet, many developmental, biological, social, and cognitive changes occur in adolescence.

With respect to cognitions and their development, Piaget’s theory is considered the most comprehensive theory of cognitive development (Goswami, 2008). According to Piaget, children typically transition from concrete-operational stage to the formal operational stage as they enter adolescence (Shaffer, Wood, & Willoughby, 2005). Adolescents in the formal operational stage not only begin to take into account the consequences of their actions for themselves as well as, adolescents also begin to question authority figures. According to Shaffer et al. (2005) this stage is also marked by the emergence of increased introspection and the potential for a marked preoccupation with the self (i.e., egocentrism). Elkind (1967) elaborated on the concept of egocentrism by developing a theory that posited that as adolescents progressed from concrete to abstract thinking, adolescents engage in two forms of distorted thinking about the self and others. Elkind (1967) referred to these distorted thoughts as the “imaginary audience” and

the “personal fable.” The imaginary audience is an adolescent’s belief that “he or she is the central focus of any social situation and that the audiences’ viewpoint parallels whatever view the adolescent holds” (Beaudoin & Schonert-Reichl, 2006, p. 1001). From the imaginary audience stems the concept of the personal fable, a belief that the individual is immune from harm, unique, and special (Schwartz, Maynard, & Uzelac, 2008). Both the imaginary audience, and more so the personal fable, have been hypothesized to be associated with mood disruptions and risk behaviours, such as antisocial behaviour (Arnett, 1999; Beaudoin & Schonert-Reichl, 2006).

These maladaptive or risky behaviours, categorized as externalizing and internalizing, begin to emerge and even peak during adolescence (Rönnlund & Karlsson, 2006; Walker, Nishioka, Zeller, Severson, & Feil, 2000). Some researchers, examining the etiology of externalizing and internalizing behaviours, have focused on cognitions. A specific area of interest has been on biased or inaccurate cognitions and their association with externalizing and internalizing behaviours. The purpose of this study is to investigate the relationship of specific and general self-debasing (cognitions which are inaccurate and debase the self) and self-serving (cognitions which protect an individual from self-censure) cognitive distortions to self-reported and teacher-reported internalizing, externalizing, and co-occurring problems among community-based adolescents.

Definitions

Externalizing and Internalizing Problems

In this study, two constructs were examined in conjunction with cognitive distortions: internalizing and externalizing problems. This section will provide a brief

overview of internalizing and externalizing problems in relation to the multiaxial empirically based assessment model (Achenbach & McConaughy, 1987; Achenbach & Rescorla, 2001).

Externalizing and internalizing problems are two empirically derived dimensional constructs that have been used frequently to operationalize child and adolescent problem behaviours along these two broadband scales (Deković, Buist, & Reitz, 2004).

Specifically, internalizing problems are a “broad class of co-occurring problems that mainly involve inner distress” whereas externalizing are problems “which mainly involve conflict with others and social mores” (Achenbach & McConaughy, 1997, p. 54).

Externalizing problems primarily consist of aggression and delinquency whereas internalizing problems include depression and anxiety as the two primary components (Achenbach & Rescorla, 2001). In a broad sense, internalizing can be described as including depression, anxiety, and withdrawal (Deković et al., 2004). It should be noted that, although sharing some common symptomology, internalizing as operationalized in this study is not a diagnostic categorization as conceptualized by the *Diagnostic and statistical manual of mental disorders* (APA, 2000) .

In the literature, externalizing problems have been typically described as aggressive, disruptive, hyperactive, antisocial, and delinquent behaviours (Achenbach & Rescorla, 2001; Liu, 2004). Studies addressing externalizing problems have typically received much more attention than those focusing on internalizing problems (Deković et al., 2004). Some possible reasons posited by Deković et al. (2004) suggest that externalizing problems may be more common, more visible, and have more overt negative consequences than internalizing problems. Indicative of this is that externalizing

problems are one of the most common reasons for adolescent treatment and referrals (Henggeler & Sheidow, 2003). In the current study, aggression is defined as physical or behavioural harm to other adults, children, and animals. This is consistent with the *DSM-IV-TR's* (2000) description and reflects the types of problems described in the measures of the Teacher's Report Form, and Youth Self-Report used in this study (Achenbach & Rescorla, 2001). A similar rationale was used to define delinquency, consisting of such problems as vandalism, stealing, lying, and other rule breaking behaviours (Achenbach et al., 2002).

Cognitive Distortions

Within the literature, both internalizing and externalizing problems have been associated with cognitive distortions, which are biased or inaccurate mental representations, and justifications of cognitions and behaviours (Barriga, Landau, Stinson, Liao, & Gibbs, 2000; Gibbs, 2009). An example of a cognitive distortion might be blaming someone in order to justify or excuse physical aggression against that person, regardless of that person's culpability.

Cognitive distortions may be an integral underlying mechanism in the expression of internalizing and externalizing problems in adolescents. Cognitive distortions have been described as either self-serving or self-debasing (Barriga et al., 2000). Self-serving distortions protect an individual from self-blame or a negative self-concept, thus, serving to disinhibit aggressive and antisocial behaviour by neutralizing empathy or guilt (Barriga et al., 2000). Conversely, self-debasing cognitive distortions "inaccurately debase the self in direct or indirect ways" (Barriga et al., 2000, p. 38). The term self-debasing cognitive distortions has been used by Barriga et al. (2000) to describe Beck,

Rush, Shaw, and Emery's (1979) negative cognitive errors. In this study, self-serving and self-debasing were used to describe general cognitive distortions.

Self-serving and self-debasing cognitive distortions have been operationalized as comprising four specific distortions (Barriga et al., 2000; Leitenberg, Yost, & Carroll-Wilson, 1986). The specific self-debasing cognitive distortions are catastrophizing, personalizing, overgeneralizing, and selective abstraction (Leitenberg et al., 1986). Examples of specific self-debasing cognitive distortions can be found in Table 6. The specific self-serving cognitive distortions include: self-centered, blaming others, minimizing/mislabeling, and assuming the worst (Barriga et al., 2000). See Table 4 for examples of specific self-serving cognitive distortions. When identifying distortions in the current study, such as assuming the worst or catastrophizing, they are labeled as specific distortions in order to differentiate them from the general self-debasing and self-serving distortions. Finally, in this study, the term co-occurrence was used as opposed to comorbidity as suggested by some researchers (Lilienfeld, 2003; Starcevic, 2005). For example, Starcevic (2005) suggested that because clinicians and researchers are generally not sure of either the causal relationship or the interaction of the two diagnoses, it may be more accurate to describe the association as the coexistence of diagnoses.

Co-occurrence of Internalizing and Externalizing Problems

Internalizing and externalizing are two broadband categories of problems that have been studied extensively in the literature (McConaughy, Stanger, & Achenbach, 1992; Reitz, Deković, & Meijer, 2005). A common finding is that referred and nonreferred children and adolescents often exhibit co-occurring internalizing and externalizing problems (Achenbach, 1993; Youngstrom, Findling, & Calabrese, 2003). Achenbach and

McConaughy (1997) define co-occurrence “as the coexistence of two or more disorders in the same person” (p. 53). McConaughy, one of Achenbach’s co-researchers, provides a similar, more specific, definition of co-occurrence: “the coexistence of two or more distinct disorders or syndromes in the same individual” (McConaughy & Skiba, 1993). In this study, the term co-occurrence was used as opposed to comorbidity as suggested by some researchers (Lilienfeld, 2003; Starcevic, 2005).

The syndromes of interest, in this study, are internalizing and externalizing problems and their co-occurrence. Despite researchers suggesting that co-occurring internalizing and externalizing problems co-occur in clinical and community-based adolescents (Garnefski & Diekstra, 1997; Youngstrom, Findling, & Calabrese, 2003), few studies, when compared to clinical studies, have addressed co-occurrence in community samples of adolescents. A similar gap in the literature exists when examining co-occurrence in conjunction with self-serving and debasing cognitive distortions.

It is important to study co-occurrence of internalizing and externalizing problems for a number of reasons. First, from a theoretical perspective, if internalizing and externalizing are co-occurring this may have implications for the development of these behaviour problems. Furthermore, the high degree of co-occurrence between internalizing and externalizing may indicate a third behaviour syndrome as suggested by Lewinsohn, Rohde, and Seeley (1995): internalizing, externalizing, and co-occurring.

A practical reason for studying co-occurrence is that it may help to specify and improve prevention and treatment options, depending on whether the adolescent is internalizing, externalizing, or both (Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003) . If the adolescent exhibits the more “complex” symptomology of co-occurrence, then

treatment may be different than if displaying only internalizing or externalizing (Kazdin, 2004). The importance of specifying treatment and prevention programs become more apparent when one realizes that an adolescent with co-occurring internalizing and externalizing problems is more severely impaired and has a worse prognosis than an adolescent who exhibits either internalizing or externalizing problems alone (Wolff & Ollendick, 2006).

Empirically Based Assessment

In an effort to better understand child and adolescent psychopathology, Achenbach and McConaughy (1987) developed a “multiaxial empirically based assessment” protocol to facilitate the assessment of youth based on information gathered from various informants (e.g., parents, teachers). Empirically based assessment is defined as “procedures that are based on observations and experience and can be verified or disproved by observation or experiment” (McConaughy, 1993, p. 3). The assessment of youth is done with the Achenbach System of Empirically Based Assessment school-age forms (ASEBA; Achenbach & Rescorla, 2001). The school age forms of the ASEBA include behavioural rating scales completed by the youth, the Youth Self-Report (YSR), by the parent or caregivers, the Child Behavior Checklist (CBCL), and by teachers, the Teacher’s Report Form (TRF). The TRF, YSR, and CBCL have 90 items in common. The YSR and TRF were used in this study to obtain information on participants’ internalizing and externalizing problems.

Some of the advantages of using empirically based rating scales, according to McConaughy (1993), are that rating scales are a more reliable source of information of a youth’s problem behaviour than subjective evaluations. Because the scales provide norm

based scores, a youth's problems can be compared to a normative sample providing better indication of "deviance." Finally, rating scales are an efficient means of obtaining information on youth problem behaviours.

A feature of behavioural rating scales is the use of multiple items to measure problems or competencies (McConaughy, 1993). A distinguishing feature in empirically based assessment is the combining of multiple items to create syndromes: a "group of problems that tend to co-occur or covary with each other" (McConaughy, 1993, p. 4). In Achenbach's (1985) empirically based assessment model, empirically derived syndromes were obtained by using factor and principal components analyses to aggregate multiple items into the aforementioned syndromes.

The practical importance of using syndromes is that a taxonomy of behaviours is created and, as such, provides a common set of behaviour problems that can, for example, be compared across multiple informants (McConaughy, 1993). It should also be noted that the procedures used to develop the empirically derived constructs differ from constructs or measures derived from theoretical perspectives. Empirically based assessment does not rely on "a priori methods for selecting individual items and aggregating items into categories or subscales" (McConaughy, 1993, p. 4) but on statistical analyses (McConaughy, 1993). As an example, in a theoretically derived problem, assumptions about the problem already exist and whether an individual exhibits the problem or not is based on a set of criteria grounded in clinical experience and assumptions (Verhulst & Achenbach, 1995). Empirically based assessment syndromes are, in part, derived from statistical procedures that measure covariation among the behaviours.

In order for researchers or clinicians to compare scores across the three measures (CBCL, TRF, YSR), it was necessary to integrate the data across gender, age, and informants. In a series of statistical procedures (e.g., varimax analyses), Achenbach (1991c) analyzed a large number of clinically referred youths' TRF, CBCL, and YSR scores. These same measures were given to a representative sample of non-referred youth, and the scores compared to the clinical sample. Cut point scores were then derived to distinguish between the referred and non-referred youth. These cut points, were indicated by normalized T scores or percentages, and they are used to distinguish between clinical and nonclinical cases.

Clinical Versus Nonclinical

An important clarification is needed for the terms clinical and nonclinical. Although the term clinical is used to describe youth who exhibit problems, the scale names (e.g., Aggressive Behaviour, Anxious/Depressed) in the CBCL, YSR, and TRF measures are not diagnostic labels but descriptors of the problem behaviours (McConaughy, 1993). Furthermore, Achenbach's system is a taxonomic system, and, thus, the goal of such a system is to "identify patterns that mark important differences between groups of individuals" (McConaughy, 1993, p. 64) and not a diagnosis of the problem behaviour (Verhulst & Achenbach, 1995). The key point is that clinical level scores on the YSR, CBCL, and TRF should not be interpreted as clinical diagnoses (Achenbach, 1991c; Achenbach & McConaughy, 1997).

Prevalence and Consequences of Externalizing, Internalizing, and Co-occurring Problems

According to Loeber and Hay (1997) by age 16, nearly 40% of boys have engaged in aggression (causing or threatening physical harm), and more dramatically 60% of adolescents are involved in some form of problem behaviours according to Reitz et al. (2005). Official youth court statistics from Canada, reflecting externalizing problems, show a similar picture (Thomas, 2003/04). For example, among 12 to 17 year old adolescents brought before youth court, 36% had committed property crimes such as theft or break and enter, and 26% of the cases were crimes against a person with common assault as the most common charge (Thomas, 2003/04). Aggression and delinquency have many consequences some of them are very serious. Early aggression, for example, is associated with frequent fighting in adolescence, convictions by adulthood, peer rejection, and failure in school (Deater-Deckard & Plomin, 1999; Farrington, 1994; Tarolla, Wagner, Rabinowitz, & Tubman, 2002). Studies suggest that externalizing problems are not isolated to a few “outcast” teenagers, but are quite common among adolescents, leading some researchers to theorize that externalizing problems are normative and part of development (Compas, Hinden, & Gerhardt, 1995; Dryfoos, 1990; Moffitt, 1993).

Internalizing problems such as depression are disconcertingly common in adolescents, especially among girls. In the 2004 National Survey of Drug Use and Health, which targeted adolescents aged 12 to 17, 9% of the youth reported at least one depressive episode in the year prior to the survey. The lifetime prevalence was an estimated 14% of the adolescent population in the United States. According to the survey,

females were twice as likely as males (13% vs. 5%) to report a depressive episode in the year prior to the survey (Office of Applied Studies, 2005).

In Canada, 5.3% of youth aged 15 to 19 suffer from depressive disorders within a 12-month period and the 12-month prevalence being 13.9% in girls and 6.6% in boys (Nguyen, Fournier, Bergeron, Roberge, & Barrette, 2005). With respect to anxiety, the 12-month prevalence is higher than for depressive disorders. Six percent of Canadian youth aged 15-19 suffer from an anxiety disorder. Females and males 12-month prevalence of anxiety disorder is 8.9% and 4.3% respectively (Nguyen et al., 2005). These statistics are concerning, given the consequences of depression and anxiety in adolescents which include dropping out of school, delinquent behaviour, drug use, and suicide (Lewinsohn et al., 1993; McClure & Pine, 2006).

The prevalence of co-occurring internalizing and externalizing problems in community samples has ranged from 11 to 52% (Garnefski & Diekstra, 1997; McConaughy & Achenbach, 1994; McConaughy & Skiba, 1993). The consequences of co-occurrence in adolescent are no less severe than those of internalizing and externalizing problems. For example, in their study of community adolescents, Lewinsohn, Rohde, and Seeley (1995) found that co-occurrence impacted academic performance and utilization of mental health treatment. In addition, they also found that co-occurrence of depression and conduct problems increased the rate of suicide attempts.

Significance of the Study

The prevalence of externalizing, internalizing, and co-occurring problems is high among adolescents, and the consequences can be life altering. Understanding the role cognitive distortions may play in adolescents' externalizing and internalizing problems

may have both theoretical as well as practical significance. At the theoretical level, examining the relationship of cognitive distortions to adolescent psychopathology may provide insight into the mechanisms underlying the emergence of internalizing and externalizing problems in adolescence. At a practical level, examining the role of cognitive distortions in relation to adolescent externalizing and internalizing problems may inform the development and implementation of effective prevention and intervention strategies.

The literature supports the association between cognitive distortions and internalizing and externalizing problems in adolescents (Barriga, Hawkins, & Camelia, 2008; Barriga, Morrison, Liao, & Gibbs, 2001; Frey & Epkins 2002; Leung & Wong, 1998). Although some research reports the positive association between cognitive distortions and internalizing and externalizing problems, substantial gaps still remain in the literature. First, there is a paucity of research examining the relationship of cognitive distortions to internalizing and externalizing problems in adolescents. Second, very few studies have explored the relationship of cognitive distortions to internalizing and externalizing problems in community samples of adolescents. Third, there is a lack of studies exploring specific cognitive distortions and their association with internalizing, externalizing, and co-occurring internalizing and externalizing.

The focus of this study is to examine the association of specific and general cognitive distortions to externalizing, internalizing, and co-occurring problems among community-based adolescents. Focusing on internalizing and externalizing problems is important because adolescents who engage in these behaviours are at risk for serious long-term and short-term consequences. For example, peer rejection, failure in school, or

drug use (Deater-Deckard & Plomin, 1999; Lewinsohn et al., 1993). Furthermore, research has shown that internalizing and externalizing problems reach their peak during adolescence, thus emphasizing the importance of studying this age group (Loeber & Hay, 1997; Petersen, Compas, Brooks-Gunn, Stemmler, Ey, & Grant, 1993). In addition to examining internalizing and externalizing problems, it is important to study the co-occurrence of these problems because of the consequences and the potential to extend the literature as it is an often overlooked variable in community adolescents. The study of co-occurrence can potentially, in conjunction with cognitive distortions, inform present and future prevention and treatment options.

Extant research on the link between cognitive distortions and externalizing and internalizing problems is limited in several ways. For example, although limited in number and scope, support exists in the literature for the association of self-serving cognitive distortions with externalizing problems and self-debasing cognitive distortions association with internalizing problems in adolescents. Barriga et al. (2000) found that self-reported self-serving cognitive distortions were associated with externalizing problems, but their sample consisted of predominately incarcerated adolescents. Moreover, similar associations between cognitive distortions and externalizing and internalizing problems have been reported, with the participants consisting of solely incarcerated youth (Frey & Epkins, 2002) or males (Barriga et al., 2008) leaving a gap in the literature of the aforementioned constructs in the population of community-based adolescents.

What is lacking in the literature is a study of not only general cognitive distortions (self-debasing and self-serving), but specific distortions associated with internalizing,

externalizing, and co-occurring problems. Knowing what specific distortions are linked to internalizing, externalizing, or co-occurring problems may directly affect the focus of treatment (Sudak, 2006). Specifically, the identification of a specific distortion or distortions associated with different dimension of adolescent psychopathology may provide a more efficient use of programs and counselling and is a vital factor in treatment outcome (Beck, 2005; Sanders & Wills, 2005).

In the extant research, the examination of gender differences has shown that females reported less self-serving cognitive distortions than the male participants in a study on cognitive distortions (Barriga et al., 2001). Despite these findings, further studies exploring gender differences in cognitive distortions have been virtually nonexistent. In contrast, the majority of studies exploring cognitive distortions have focused on incarcerated adolescent boys (e.g., Nas, Brugman, & Koops, 2005) or violent adolescents (e.g., Guerra & Slaby, 1989). Therefore, a pertinent question that requires further examination is whether gender differences exist in the type and magnitude of distortions associated with externalizing and internalizing problems in community sample of adolescents.

Extending the Literature

The intent of this study is to advance the extant literature in following ways: First, is the use of community-based adolescents as participants. The few studies that have examined the relationship of cognitive distortions to externalizing and internalizing problems have used incarcerated, clinical, delinquent youth, children, adults (e.g., Barriga et al., 2000; Nas et al., 2005; Tems, Stewart, Skinner, Hughes, & Emslie, 1993), or youth from various ethnicities (e.g., Barriga et al., 2008; Leung & Wong, 1998) as participants.

The lack of research using community-based adolescents presents a substantial gap in the literature. As such, the focus on community-based adolescent participants may increase the generalizability of the current results by eliminating potential referral bias that may be present when using clinical or incarcerated participants, thus providing a more heterogeneous sampling of the adolescent population.

Second, the study addressed the issue of co-occurring internalizing and externalizing problems in relation to cognitive distortions. Recognizing the importance of co-occurring internalizing and externalizing problems and the potential association with cognitive distortions may help fill an existing gap in the literature. It is important to study the co-occurrence of these problems because of the potential consequences and because this specific manifestation of internalizing and externalizing in community adolescents has received little attention in the extant literature (Garnefski, Kraaij, & van Etten, 2005). Third, specific self-serving and self-debasing cognitive distortions have received very little empirical attention in North American community samples of adolescents in the internalizing and externalizing literature. Therefore, they were included in this study to address the gap in the extant literature.

A fourth way that this research extended the literature was by including both male and female adolescents from the community, a sampling approach that has not been consistently found in the literature. Additionally, the study of gender differences in the type and magnitude of cognitive distortions associated with externalizing and internalizing problems in community samples addressed a gap in the literature. Finally, in this study, multiple informants (teachers and youth) were used in order to provide a

broad and theoretically more valid measure of internalizing and externalizing problems of the adolescent participants.

The participants in this study were drawn from a community-based sample ranging in age from 12 to 17. This age range is particularly noteworthy because both longitudinal and cross-sectional studies have shown that depressive and anxiety disorders typically begin increasing at 12 years of age and increase into middle adolescence (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Zahn-Waxler, Crick, Shirliff, & Woods, 2006). A similar trajectory has been reported for conduct disorders, except for a typically earlier onset than the depressive disorders (Costello et al., 2003; Zahn-Waxler, Shirliff, & Marceau, 2008). Moreover, Achenbach and Rescorla (2001) when looking at self-reported internalizing and externalizing problems, found that the mean scores for internalizing and externalizing problems were higher for 15 to 16 year olds than the 13 to 14 year olds, supporting longitudinal studies that indicate that internalizing and externalizing problems tend to increase through late childhood and typically peak at middle adolescence, as does the prevalence of co-occurrence (Wolff & Ollendick, 2006). Based on the psychopathology and epidemiological literature the study of 12 to 17 year olds provides a sample which encompasses both the start and peak of internalizing and externalizing problems in adolescents (Kovacs & Devlin, 1998).

A specific focus on community-based adolescents is important because this population exhibits a high prevalence of externalizing, internalizing, and co-occurring problems. Furthermore, cognitive distortions have been associated with externalizing, internalizing, and co-occurring problems in incarcerated and referred adolescents. However, community-based adolescents have not received the empirical attention

afforded incarcerated and referred adolescents. Focusing on a community sample of adolescents provided a broader range of participants and increase generalizability to the general population of typical adolescents.

CHAPTER 2

REVIEW OF THE LITERATURE

The ability of humans to inaccurately attend and confer meaning to self, behaviours, and others is a proclivity recognized by all who engage in daily living. Whether it is a perceived compliment or slight, misperceptions of these and other interactions are an everyday occurrence. A range of disciplines as diverse as psychoanalysis to sociology have studied this ubiquitous faulty thinking or distortions (e.g., Freud, 1936, as cited in Cramer, 1998; Sykes & Matza, 1957).

This study begins with a review of three diverse theories of cognitive distortions in order to provide a theoretical background for the cognitive distortion model that was utilized in this study. Specifically, the review addresses these theories of cognitive distortions to provide a background of the theoretical influences and subsequent development of Gibbs et al. (Gibbs, 1993; Gibbs, Potter, & Goldstein, 1995) four-category typology of self-serving cognitive distortions. Furthermore, I examine how the theories have a substantial overlap in the type of cognitive distortions described as precursors to externalizing problems and the mitigating power of these distortions on emotions and cognitions associated with repeated externalizing problems. The literature review also includes an examination of Beck's (1967) cognitive theory, one of the most influential theories positing the association between self-debasing cognitions and internalizing problems.

Behaviours such as aggression, delinquency, and even genocide have all been the focus of a rich and vast empirical and theoretical literature that attempts to shed light on the association between maladaptive behaviours and faulty thinking (e.g., Bandura, 1991;

Barriga et al., 2000). A common element in all the behaviours mentioned above is the presence of self-serving cognitions that, theoretically, enable individuals to commit criminal or antisocial acts. For example, a common self-serving cognition is attribution of blame (Bandura, 1991) or blaming the victim where the perpetrator may believe that the “idiot deserved to get robbed because he left his car door open.”

Conversely depression and anxiety have been posited to stem from self-debasing cognitions which, unlike self-serving cognitions, diminish confidence and resolve (Beck, 1967). Thus, if an individual fails at a task, his or her self-debasing cognition may be that “I am useless I will never succeed at anything.” Differing theoretical positions posit dissimilar etiological causes of faulty thinking. In this review, an examination of sociological and cognitive theories associated with faulty thinking are discussed.

The two primary models that inform this study are Beck’s (1967) theory of depression and Gibbs’ (1993) four-category typology of cognitive distortions. Beck’s theory is prominent in this study because it is one of the most influential theories addressing the association between cognitive distortions and behaviour, and furthermore, it is the theoretical basis of self-debasing cognitive distortions and specifically Leitenberg et al.’s (1986) Children’s Negative Cognitive Error Questionnaire (CNCEQ) which was used to measure self-debasing distortions in the current study. Leitenberg et al. designed the CNCEQ based on Beck et al. (1979) list of seven cognitive errors. Leitenberg et al. found that some of the cognitive errors overlapped; therefore, they were combined and condensed to the four cognitive errors found in the CNCEQ. Gibbs’ (1993) four-category typology of cognitive distortions is important because it specifically addresses adolescent cognitive distortions and is the basis for the How I Think questionnaire (HIT; Barriga,

Gibbs, Potter, & Liao, 2001), a measure of adolescent self-serving cognitive distortions used in this study.

In this review, I critically evaluate empirical support for both of these models with emphasis placed on studies with adolescents. Given the paucity of empirical research on adolescents, studies including adults and children are included to provide a broader empirical basis for evaluation. Second, a review of theories of internalizing and externalizing problems is put forth. Finally, a critical review of the literature is undertaken to illustrate the link between internalizing and externalizing problems and cognitive distortions.

Influential Theories

This section presents an overview of some influential theories that have incorporated cognitive distortions as part of their overall explanation of human behavior. Moreover, they have influenced current theories such as the four-category typology of cognitive distortions (Gibbs, 1993; Gibbs et al., 1995). These theories span a number of decades in the study of human behaviour.

Neutralization Theory

“The social scientist has long since ceased to search for devils in the mind or stigma in the body” (Sykes & Matza, 1957, p. 664). So begins Sykes and Matza’s (1957) seminal paper on delinquency. Starting from the assumptions that criminal behaviour is a process of learning techniques, motivations, and rationalizations conducive to committing crime, these authors provide a list of justifications, grounded in theory, posited to make it easier for delinquents to commit crime.

Sykes and Matza (1957) argued that most delinquent behavior is based on unconscious rationalizations that are valid to criminals but not the rest of society. Furthermore, for delinquency to occur, both the internal and external pressure to conform must be *neutralized*. According to Sykes and Matza, regardless of the delinquent's subgroup and involvement in crime, the delinquent is still part of the larger society and is aware of society's moral sanctions on criminal behaviour. Thus, if delinquents can convince themselves that no criminal intent existed in their behavior, they can avoid the negative emotional (e.g., guilt, shame) sanctions. It is this "convincing oneself" that is at the heart of the neutralization theory. Justifications for engaging in delinquency are described as rationalizations and are thought to follow deviant behaviour, so as to protect from negative emotional repercussions. It is also believed that these rationalizations precede behaviours making it easier to commit crime.

Neutralizations. Sykes and Matza (1957) described in their paper what they called justifications or techniques of neutralization. The first technique is that of *denial of responsibility* typified by delinquents abrogating responsibility for their behaviour, thus, reducing self and other sanctions. *Denial of injury* is the belief that behaviour does not cause much if any harm. Closely related to denial of injury is *denial of the victim* where even if harm is accepted to have occurred by the delinquent, the justification is that the victim deserved the harm. *Condemnation of the condemners* enables the delinquent to shift the responsibility on to the ones who would sanction the delinquent by claiming that they are hypocrites or have a personal agenda. *Appeal to higher loyalties* is the last technique, and this involves loyalties to subgroups (e.g., gangs, family) as opposed to

society. Neutralization theory argues that neutralizations diminish the effectiveness of social constraints on delinquent behaviour.

The theory of neutralization has been influential in the study of delinquency even though empirical studies have been inconsistent in their support of this theory (Shields & Whiteall, 1994). Despite the equivocal support from the aforementioned research, neutralization theory is still informing current delinquency research (e.g., Peretti-Watel, 2003), and some of its constructs have also had a strong influence on current social-cognitive models.

Yochelson and Samenow's Concept of Thinking Errors

Sykes and Matza's (1957) theory is grounded in the sociological tradition, but its components are based on cognitions and to a large extent, faulty cognitions that justify behaviours. Yochelson and Samenow (1976), based on interviews with male offenders, outlined a number of errors in thinking that they believed were criminogenic. These errors in thinking were derived from numerous interviews with institutionalized and non-institutionalized criminals that included youth and adults. In addition, friends, family, and other individuals important to the criminal were interviewed to broaden the amount of information on the criminals' thoughts and beliefs.

This phenomenological perspective yielded what Yochelson and Samenow (1976) labeled *thinking errors*. The thinking errors posited by Yochelson and Samenow, totaling 46, were classified into three groups: criminal thinking patterns, automatic errors of thinking, and from idea to execution. Three of these thinking errors are relevant to our discussion because of their ubiquity in the theories that I will examine. These include the

following: *victim stance*, *failure to put oneself in another's position*, and *failure to consider injuries to others*.

The scope of this paper does not permit a full examination of Yochelson and Samenow's (1976) theory, but it is cited in order to highlight the influence of Sykes and Matza's (1957) rationalizations on some of Yochelson and Samenow's and other models of thinking errors. As an example, failure to put oneself in another's position and failure to consider injuries to others in Yochelson and Samenow's model is analogous to denial of the victim and denial of injury respectively in Sykes and Matza's theory.

Sykes and Matza (1957) theorized that one of the primary goals of using rationalizations is to neutralize "moral culpability" (p. 666) and allow the delinquent to evade self-blame and the resultant guilt or shame. Very similar motivations can be found underlying Bandura's (1991) construct of moral disengagement.

Moral Disengagement

Bandura, Barbaranelli, Caprara, and Pastorelli (1996) posited that moral reasoning is transformed into action through self-regulatory mechanisms called moral disengagement. Through the course of socialization, people learn what an acceptable form of moral behaviour is and what is not. These behaviours are either condoned or sanctioned. Regulation occurs when an individual engages in activities that contravene the standards or conform to these standards. Thus, when individuals believe that something is wrong (contravenes standards), and they engage in such behaviour, they may feel guilt or remorse. Conversely, if these individuals engage in a behaviour that may contravene standards, but are able to activate their self-regulation, it diminishes the negative affect associated with contravening one's moral standards. This line of

reasoning is similar to that posited by Sykes and Matza (1957). They contend that delinquents may feel guilt or shame brought on by social standards, but rationalizations help to diminish the negative affect. In essence, Bandura (1996) and Sykes and Matza (1957) argue that disengagement or rationalization allows individuals to act in delinquent ways and still preserve one's moral standards.

Similarities exist between Sykes and Matza's (1957) and Bandura's (1991) conceptualizations. For example, euphemistic language is the process by which immoral acts are renamed or sanitized to allow individuals' relief from personal responsibility, or as Sykes and Matza wrote: "auto theft maybe viewed as 'borrowing', and gang fighting maybe seen as a private quarrel" (p. 667). Moral justification is used to couch the behaviour in higher standards and for the "greater good." In a broad sense, this is similar to Sykes and Matza's rationalization of appeal to higher loyalties. Table 1 outlines Bandura's eight socio-cognitive mechanisms of moral disengagement, and Table 2 provides examples of moral disengagement.

Table 1. Mechanisms of Moral Disengagement

Mechanisms	Description
Moral justification	Couching the behaviour in higher standards.
Euphemisms and sanitized language	Renaming or sanitizing immoral acts.
Exonerative comparison	Comparing actions to worse activities making the present action seem benign or of little consequence.
Displacement and diffusion of responsibility	Distancing themselves from their actions by placing responsibility on higher authorities or the group.
Misrepresenting the harm	Minimizing or discounting the harm done.
Attribution of blame	Blaming the victim.

Table 2. Examples of Moral Disengagement

Mechanisms	Examples
Moral justification	“They came on our turf; we had to stop them.”
Euphemisms and sanitized language	“Man we ‘jacked’ (stole) that dude’s Ipod.”
Exonerative comparison	“Man, I only had five drinks before I drove... John had twelve.”
Displacement and diffusion of responsibility	“I didn’t know what I was doing...I was so wasted.”
Misrepresenting the harm	“So, I punched her in the face, I barely touched her.”
Ascription of blame	“What was the guy doing walking with that expensive chain around his neck he was asking to be robbed.”
Dehumanizing	“Those guys don’t deserve to live they are lower than animals.”

Bandura’s (1991) theory of moral disengagement has received some support empirically in studies using school age children as participants (Bandura et al., 1996; Bandura, Caprara, Barbaranelli, Pastorelli, & Regalia, 2001). Although the findings from this research are promising, Bandura’s studies have all been conducted in Italy with middle class children. There are few empirical studies examining Bandura’s theory, but one study, conducted in Canada, provided support for Bandura’s moral disengagement hypothesis.

Hymel, Bonanno, Henderson, and McCreith (2002) investigated 494 grade eight to ten students in a Canadian school. The researchers found that 38% of the variance in reported bullying could be accounted for by students’ self-reported endorsements of moral disengagement strategies. Hymel et al. concluded that: “clearly, processes of moral disengagement play a potentially significant role in the development of repeated bullying” (p. 7). These findings provide preliminary support of the theory, but an

argument can be made that the Bandura and his colleague's (1999, 2001) studies may lack generalizability to North American participants due to limited amount of studies conducted in North America, and the fact that the scale used to measure moral disengagement (MDS; Bandura et al., 1996) was standardized on Italian children. This may be an issue because it is not known whether significant differences exist between Italian and North American children. Pelton, Gound, Forehand, and Brody (2004) addressed the issue of generalizability by using low-income African-American children as participants. Pelton et al. found that moral disengagement was correlated with both mother and child reports of delinquent and aggressive behaviour, and the scale appeared to be consistent across Italian and African-American participants.

Sykes and Matza's (1957) theory was one of the first systematic classifications of cognitive errors and indirectly influenced future theories of cognitive errors. Conceptually, some of Bandura's (1991) mechanisms are very similar to Sykes and Matza's (1957) techniques of neutralization. As an example, Sykes and Matza's denial of the victim is conceptually similar to the moral disengagement of dehumanizing an individual which removes all vestiges of feelings and thoughts from the victim. Similarly, denial of the victim is analogous to the mechanism of blaming the victim. Immoral actions are justified because the victims brought the suffering on themselves. The victim is seen as having provoked the behavior; thus aggressive behaviour becomes a defensive behaviour meant to "protect" the individual from the victim (Bandura, 1991). In Sykes and Matza's theory, the victim is seen as having done wrong, and the perpetrator becomes the "avenger" (p. 668).

In this section, I have examined some of the more influential theories of rationalizations in the past 50 years. A common focus of all these theories has been the attempt to explain how an individual is able to commit, for example, antisocial behaviours and avoid the negative emotional consequences. A direct corollary of avoiding the emotional consequences of negative behaviours is the increased engagement in that behaviour. Therefore, Bandura (1991), Sykes and Matza (1957), and Yochelson and Samenow's (1976) theories have all focused on antisocial behaviours and the cognitive rationalizations which allow this behaviours to continue with diminished or lack of emotional consequences. It would seem that the techniques hypothesized by all three of these theories are similar if not in nomenclature then conceptually.

Broadly categorized, the theories examined in this section focused on distortions or more specifically cognitive distortions. The next theory reviewed is one of the primary variables of interest in this study and, consequently, is examined in more detail and depth than the preceding theories.

Theory of Self-serving Cognitive Distortions

Cognitive distortions are integral components of various theoretical perspectives with the terms used to describe distortions (e.g., moral disengagement, thinking errors, techniques of neutralization) varying across theories. In this review, the focus has been on distortions as they relate to internalizing and externalizing problems; however, other areas of inquiry have also centered on distortions. For example, the study of sexual offenders has provided a large amount of research on distortions as they relate to sexual abuse (Burn & Brown, 2006) or sexual assault (Polaschek & Gannon, 2004).

Within some of the sexual offender literature, cognitive distortions are conceptualized as implicit theories of the world around the sexual offender. What these conceptualizations have in common with cognitive distortions related to internalizing and externalizing problems are the maladaptive thoughts and rationale for engaging in negative behaviour (Ward, 2000). The focus of this paper is on cognitive distortions as they relate to externalizing and internalizing problems, and the next section examines a social cognitive perspective of cognitive distortions.

As discussed previously, Sykes and Matza's (1957) sociological construct of delinquency view distortions as techniques of neutralization, Yochelson and Samenow (1976) referred to them as thinking errors, and Bandura (1996) referred to distortions as a mechanism of moral disengagement. In the social-cognitive literature, Barriga et al. (2000) defined cognitive distortions as "inaccurate ways of attending to or conferring meaning on experience" (p. 37). Within the framework of the social information processing model (Crick & Dodge, 1994), distortions are seen to be distinct processing biases in certain situations or can be generalized as processing tendencies. Dodge (1993) states that cognitive distortions will gradually develop as inaccurate attitudes or beliefs, particularly when risk factors are present. According to Gibbs' (1993) definition, social cognitive distortions are inaccurate and meant to neutralize or rationalize attitudes, thoughts, or beliefs with respect to oneself and others.

Four-category Typology of Cognitive Distortions

The development of the four-category typology of cognitive distortions can be traced through the work of Sykes and Matza (1957), Yochelson and Samenow (1976), and to a certain extent Bandura (1991). A more direct influence can be found in the

writings of Carducci (1980) who identified three specific social problems with antisocial youth: social skill differences, social developmental delays, and social cognitive distortions. Gibbs and his colleagues (Gibbs, 1993; Gibbs et al., 1995) through their work with antisocial youth introduced a model of self-serving cognitive distortions.

The four-category typology of self-serving cognitive distortions distinguishes between primary cognitive distortions such as self-centered thoughts, attitudes and beliefs, labeled the *self-centered* category by Gibbs et al. (1995), and secondary distortions which are categorized as: *blaming others*, *minimizing/mislabeling*, and *assuming the worst*. The primary distortions are supported by secondary distortions (Barriga & Gibbs, 1996), which are defined as rationalizations that can occur before or after the transgression and are hypothesized to “neutralize” guilt or feeling bad about behavior, thus, preventing damage to self image. Gibbs (1991) suggests that the stress caused by empathic distress and cognitive dissonance are mitigated by secondary distortions. Table 3 provides descriptions of Gibbs et al.’s (1995) four categories, and Table 4 illustrates examples of self-serving cognitive distortions.

Table 3. Four-Category Typology of Self-serving Cognitive Distortions

Distortions	Description
Self-centered thoughts	Has feelings, needs, and expectations above others.
Blaming others	Places blame/ responsibility on others or events.
Minimizing/mislabeling	Downplays responsibility or consequences of actions.
Assuming the worst	Believes that others’ intentions are hostile or has expectations of the worst.

Table 4. Examples of Self-Serving Cognitive Distortions

Distortions	Examples
Self-centered thoughts	“I don’t care what my parents said I need to go to this party.”
Blaming others	“If the kid had not bumped me, I wouldn’t have punched him.”
Minimizing/mislabeling	“So what If I steal... the store makes lots of money.”
Assuming the worst	“That kid keeps on looking at me; he wants to fight...I’ll show him.”

An examination of the primary and secondary distortions reveals an expected overlap with previous theories. The self-centered distortion is similar to Yochelson and Samenow’s (1976) description of the thinking error of ownership defined as a sense of entitlement to whatever the individual wants. Blaming others is analogous to Sykes and Matza’s (1957) similarly labeled rationalization. Assuming the worst, as viewed from a social information processing perspective, is similar to hostile attribution bias (HAB; Dodge, 1980). HAB is a cognitive bias found in some aggressive boys who, when faced with ambiguous social cues from a peer, will tend to infer hostile intentions on the part of the peer. Furthermore, assuming the worst is unique in that it is both “aggressogenic and depressogenic”, as such, it can be both self-debasing and self-serving, more so among co-occurring individuals (Gibbs, 2009).

What seems evident, despite the different labels for the distortions, is that a significant conceptual overlap occurs between theories examined thus far in this review such as neutralization theory, moral disengagement, thinking errors (Yochelson & Samenow, 1976), and the four-category typology model. The cognitive distortions examined in this section can be classified as self-serving in that they ease the individual’s ability to engage in transgressive behaviour by mitigating the cognitive and moral

repercussions. The next section will address cognitions that are self-debasing and may be viewed as having negative internal consequences such as depression.

Beck's Cognitive Theory

Similar to the research on self-serving distortions, the study of self-debasing distortions has also been the focus of over thirty years of research. A unique contribution of cognitive theories and self-debasing thoughts has been the link between the empirical literature and the practical application of the theories in psychotherapy. Two of the most recognized names in cognitive therapy are Aaron Beck and Albert Ellis. Ellis (1977) and Beck (1967) both argue that cognitions play an integral part in emotions and behaviours. It is Beck who has provided detailed descriptions of specific distortions that are hypothesized to lead to internalizing problems such as anxiety and depression.

Diathesis-Stress Theory

Beck's (1967) Diathesis-stress cognitive theory of depression suggests that cognitions, particularly negative beliefs about self, are integral in the development of depression. An integral part of Beck's theory is the concept of schemata or knowledge bases. These affect how individuals encode, understand and retrieve information. These processes occur through schematic guidance of expectations, attention, interpretation, and memory searches (Abela & D'Alessandro, 2002).

According to Beck (1967), if a depressogenic schema is activated, access to negative thoughts occurs. These trigger a pattern of continuous negative self-information characterized by cognitive errors. The danger, according to Beck, is that engaging in this pattern of cognitions will develop into the negative cognitive triad. The triad is defined as a negative view of the world, self, and the future. This triad is sufficient to cause

depression and to lesser extent anxiety along with the resultant problems in psychological, physical, and behavioral functioning (Abela & D'Alessandro, 2002; Epkins, 1996). An important component of Beck's theory is that negative events (stress) are required before an individual who possesses depressogenic schemata (diathesis) will become depressed. Therefore, if there is an absence of stress the schemata will not be activated.

Two basic assumptions underlie Beck's (1967) theory: one is that cognitions lead to emotions, and the other is that depressed individuals' self-beliefs are distorted. Beck described seven self-debasing cognitive distortions, called cognitive errors (Clark, Beck, & Alford, 1999), four of which are measured, using the CNCEQ, in the current study (see Table 5). Table 6 describes the four self-debasing cognitive distortions.

Table 5. Beck's Self-Debasing Cognitive Distortions

Distortions	Description
Catastrophizing	Belief that the worst will happen regardless of the situation.
Personalizing	Act of internalizing all responsibility when things go wrong.
Overgeneralizing	Belief that one single negative outcome is indicative of all situations or will occur in all similar situations.
Selective abstraction	Tendency to focus on only the negative aspects of a particular situation.

Table 6. Examples of Self-debasing Cognitive Distortions

Distortions	Examples
Catastrophizing	"I'll be so upset I won't be able to function at all."
Personalizing	"The teacher didn't ask me a question; I must have upset her."
Overgeneralizing	"Because I didn't meet anybody at the party, I don't have what it takes to meet people."
Selective abstraction	"I didn't score a goal in the game. I suck at hockey."

Distortions and their association with depression have been generally supported in the literature. The next section examines some of the evidence that supports Beck's hypotheses, and some studies that do not.

Empirical evidence for the diathesis-stress theory. Beck's (1967) diathesis-stress theory and its concepts have been empirically examined in the literature. In this section, some of this research will be examined and evaluated. In a study of depressed children in grades 3 to 6, Kendall, Stark, and Adam (1990) found that when compared to teacher reports, depressed children's self-evaluations were unrealistically negative suggesting a personalizing distortion. These findings suggest that when depressed children are asked to choose self-descriptive adjectives, they tend to select more negative than positive as compared to nondepressed children (Hammen & Zupan, 1984).

In a study designed to address the diathesis-stress theory and one of the components of the negative triad (negative future outlook), Abela and D'Alessandro (2002) recruited 136 high school seniors (64 males & 72 females) who had applied for early admission to a university. Due to rules governing early admission, only one school could be selected. Thus, the researchers could be assured that this was the students' first choice school. Participants completed a battery of questionnaires meant to measure moods, cognitive styles, and attitudes as well as a cognitive priming questionnaire.

The use of the cognitive priming questionnaire (Abela, 1995) was important because, according to Beck's (1967) theory, a depressogenic schema has to be activated for depression to occur. After the admissions letter had been received, the participants were divided into three groups: positive outcome, negative outcome, and deferred admission.

Abela and D'Alessandro (2002) reported that students, who self-reported dysfunctional attitudes (analogous to negative thoughts) and had primed their negative schemata, increased in depression when receiving bad news, but did not increase in depression following positive news. The conclusion reached was that those students receiving negative news developed depressive symptoms mediated by negative views of the future.

Abela and D'Alessandro (2002) also reported that negative views of self, another component of the triad, did not mediate dysfunctional attitude and depressed mood. These results support the negative future outlook component of Beck's negative cognitive triad but not the negative self. The researchers found that dysfunctional attitudes predicted increased depression after individuals received negative news. This is what would be predicted by the diathesis-stress theory. The use of a priming measure is an important methodological component of this study. As previously mentioned, according to Beck's (1967) theory, schemata have to be activated to produce depression. The use of a cognitive priming measure strengthened the researchers' conclusions with respect to Beck's theory.

Abela and D'Alessandro's (2002) findings extended those of Olinger, Kuiper, and Shaw (1987). In their research of students from a Canadian university with a mean age of 19, Olinger et al. discovered that when faced with negative events, young adults who were vulnerable to depression, were more likely to exhibit depressive symptoms as measured by the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

Olinger et al. (1987) also reported that the higher the level of vulnerability to depression, the stronger the relationship between stressful life events and depression. The authors of this study concluded that participants vulnerable to depression tend to ruminate and focus on events that are relevant to their depressogenic attitude more than the nonvulnerable participants.

The Olinger et al. (1987) study does have some limitations, such as the use of young university students who may exhibit differing levels and types of stress when compared to a diverse or an older sample. Furthermore, the study is correlational; thus, it does not provide results that are directional. Furthermore, differing life events that may cause depression are not accounted for by correlational analyses.

In a longitudinal study comparing 8 to 16 year old depressed child and adolescent psychiatric inpatients, nondepressed child and adolescent psychiatric inpatients, and nonreferred children and adolescents, Tams et al. (1993) found that the depressed child and adolescent psychiatric inpatients differed by having significantly higher levels of distortions and depressive symptomology when compared to the other two groups. According to the researchers, the data confirmed the association between distortions and depression. Moreover, based on the negative view of self and the world exhibited by some of the depressed participants, this study also partially supported the Beck's negative triad.

The results add to prior research confirming the role of cognitions in depression among children and adolescents (e.g., Haley, Fine, Marriage, Moretti, & Freeman, 1985; Leitenberg et al., 1986; Marton & Kutcher, 1995). These findings are also consistent with Moilanen's (1995) discovery of evidence of a negative future outlook in a sample of 14

to 18 year old non-referred adolescents. However, Moilanen did not find evidence for a negative self-schema in the participants. The use of subclinical participants may have affected the results as they may not have had depression that was chronic and severe enough to develop a consistent schema (Hammen, Miklowitz, & Dyck, 1986).

Three methodological shortcomings of the Tams et al. (1993) study need to be addressed. The first is the lack of controls for the treatment given to the inpatient participants. As such, if some received some form of cognitive therapy, then a change in cognitions would be expected over a year. Second, the researchers did not assess the participants at the end of the study. Thus, the possibility exists that the participants were at different stages of recovery. Third, the range of ages used, 8 to 16, raises the issue of developmental difference in both cognitions and depressogenic symptoms. Given these limitations, the results of Tams et al. (1993) study should be interpreted with caution.

In a study examining the association between anxiety and self-debasing cognitive distortions, Weems, Berman, Silverman, and Saavedra (2001) recruited participants from a psychiatric treatment center specializing in phobias and anxiety. These individuals included 166 children ranging in age from 6 to 11 years, and 85 adolescents ages 12 to 17 years. The participants were given a number of measures including the CNCEQ (Leitenberg et al., 1986) to examine self-debasing cognitive distortions, and the Children's Depression Inventory (Kovacs, 1981) used to measure symptoms of depression.

Weems et al. (2001) found that when controlling for anxiety, self-debasing distortions such as catastrophizing ($r = .22$), overgeneralizing ($r = .23$), personalizing ($r = .23$), and selective abstraction ($r = .29$), were all positively correlated to self-reported

depression in the total sample. Similar positive correlations were reported for the association between anxiety and cognitive distortions. Furthermore the researchers found that when the participants were divided into groups of children and adolescents. All four specific cognitive distortions were related to self-report measures of depression and anxiety, with the correlations for adolescents ranging from .47 to .68 as compared to .31 to .42 for the children. Although the results of Weems et al. (2001) study provide support for cognitive distortions and the association with depression, they are difficult to generalize to a nonclinical population.

Studies from the literature are consistent in their reporting of an association between cognitive distortions and depression in clinical, non-referred children and adolescents. What is less clear is whether cognitive distortions underlie depression or are the results of the depression in children and adolescents. Support has been published for both positions (Leitenberg et al., 1986; McGrath & Repetti, 2002).

What comes first depression or cognitions? A basic assumption posited by Beck's (1967) theory is that cognitions have priority over emotions. Studies by Cole, Martin, Peeke, Seroczynski, and Hoffman (1998), McGrath and Repetti (2002), and Tems et al. (1993) are in accord in suggesting that cognitions are a manifestation of depression and not an etiology. These and other researchers argue that a negative self-view is symptomatic of depression and not a precursor. Tems et al. (1993), studying 130 non-referred and referred children and adolescents ranging in ages from 8 to 16, found that although the depressed participants typically took a negative view of themselves, their situation, and the future these views were state dependent and not an enduring trait as

theorized by Beck (1967). Tems et al. (1993) concluded that the negative pattern of cognitions could become more trait like if they were to be repeatedly activated over time.

Conversely, research conducted by Haley et al. (1985), Leitenberg et al. (1986), and Robinson, Garber, and Hilsman (1995) found that distorted cognitions influenced depressive symptoms. For example, in a survey of 160 boys and 221 girls with a mean age of 12, researchers found that self-reported negative cognitions (e.g., lower levels of self worth and stable internal attributions for negative life events) predicted increased depressive symptoms (Robinson et al., 1995).

The results from Stewart, Kennard, Lee, Hughes, Mayes, Emslie, and Lewinsohn (2004) provide a middle ground when examining these issues. In a cross-cultural survey study of 2,272 adolescents (14 to 18 years old) from Hong Kong and the U.S., they found support for a bidirectional association between distorted cognitions and depression. In the clinical literature, it is recognized that cognition and mood interact with each other to pull an individual deep into depression, labeled the negative spiral. This concept is not incongruent with Beck's theory of depression (Beck et al., 1979). Despite the equivocal findings from the aforementioned studies, whether cognitions precede or follow depression, the literature suggests that cognitive distortions play an integral role in depression.

In this section, three theories were examined that have implicated self-serving cognitions as primary factors in delinquent or maladaptive behaviour. Although from distinct literatures, Sykes and Matza (1957) neutralization theory, Gibbs' (1993) four-typology model, and Bandura's (1991) moral disengagement theory share common ground with respect to cognitions. These theories assume that perceptions and beliefs

must be altered in order to engage in maladaptive behaviour (e.g., delinquency, aggression). Whether it is through rationalization or disengagement, the outcome is the same: behaviour that typically would not be enacted is enacted, and the emotional consequences of the behaviour are diminished. In contrast to self-serving distortions, Beck's (1967) Diathesis-stress cognitive theory, posits that self-debasing cognitions are the cause of depression. Cognitive distortions, both self-serving and self-debasing, have been theoretically and empirically associated with diverse behaviours and emotions. The next section of the paper will examine two categories of problems: internalizing and externalizing.

Externalizing and Internalizing Problems

The biological, social, and cognitive changes that occur in adolescence mark a period of vulnerability (Reitz et al., 2005). The increase in psychiatric disorders, labiality, and behaviour problems before and after puberty seem to indicate this increased vulnerability (Arnett, 1999; Moffitt, 1993; Zahn-Waxler, Kilmes-Dugan, & Slattery, 2000). The typical manifestations of the clinical and behavioral problems experienced from childhood into adolescence have been described within two broad categories labeled internalizing and externalizing (Achenbach & Rescorla, 2001). Externalizing includes aggression and delinquency as core behaviours, but also includes school problems and oppositional problems. Internalizing describes affective problems such as depression, anxiety, and withdrawal. The empirically derived internalizing and externalizing categories encompass the most common problems found in children and adolescents. For example, in a sample of 2,600 youth and adolescents (ages 4-16) from the general

population, 4.6 to 7.7% of the participants were found to be in the clinical range for internalizing and externalizing syndromes (McConaughy & Achenbach, 1994).

This review of the literature on internalizing problems will focus on depression more so than anxiety. The reason is a paucity of research that examines anxiety and cognitive distortions. Another reason is the co-occurrence of depression and anxiety in adolescents. Results from the psychiatric literature conclude that 50-72% of adolescents with depression are also diagnosed with anxiety disorders, making the co-occurrence between depression and anxiety the most common pattern among psychiatric disorders (Essau, 2003; Lewinsohn, Zinbarg, Seeley, Lewinsohn, & Sack 1997). Amongst Canadian youth aged 15 to 24, 12.1 % suffer from anxiety disorders, with a co-occurrence rate with depression of 37%, lower than other reported co-occurrence rates. These co-occurrence rates may be the result of the survey only targeting three forms of anxiety (Nguyen et al., 2005).

Anxiety has generally been found to precede depression and some researchers suggest that depression and anxiety have common etiologies (Essau, 2003). Rohde, Lewinsohn, and Seeley (1991) reported that 85% of co-occurring adolescents had anxiety before their depression. The evaluation of the psychiatric literature as it pertains to anxiety and depression is beyond the scope of this study. Therefore, in order to provide a parsimonious examination of internalizing problems, the focus will be predominantly on the depressive component of internalizing.

In a general, externalizing problems describe behaviours that hurt and are disruptive to others, whereas internalizing problems are described as being by an internal disruption or painful moods and emotions (Zahn-Waxler et al., 2000). Specifically,

internalizing problems are a “broad class of co-occurring problems that mainly involve inner distress” whereas externalizing are problems “which mainly involve conflict with others and social mores” (Achenbach & McConaughy, 1997, p. 54). The anxiety and depression manifested in internalizing problems, and the aggression and antisocial behaviours in externalizing problems, are typically on a continuum of severity and do not necessarily reflect a clinical diagnosis. However, they do seem to be common among adolescents.

Prevalence of Externalizing and Internalizing Problems in Adolescents

Moffitt (1993) in a large sample from New Zealand found that 93% of males had engaged in some form of delinquent behaviour before the age of 18. A similar percentage has been reported among Canadian youth aged 12 to 18 where 92.8% of adolescents reported committing at least one delinquent act in a given year (Marcotte, Marcotte, & Bouffard, 2002). In the United States, 80% of males had contact with police for minor crimes before adulthood, and 60% of children will be involved in some form of problem behaviour through the course of adolescence (Moffitt, 1993; Rietz et al., 2005). The magnitude of these statistics would suggest a pervasive problem among children and adolescents, especially boys, leading some researchers to suggest that this behaviour is not only normative (Compas et al., 1995) but also part of development (Moffitt, 1993).

With respect to internalizing problems, specifically depression, three distinct approaches are used to study depression and its assessment and etiology. According to Compas, Ey, and Grant (1993), the first examines depressed mood, which focuses on periods of sadness, or unhappiness along with other contextual factors such as internal or external stimuli. The second approach to studying depression includes exploring

behaviours and emotions. These indicate depression and are, therefore, labeled depressive syndromes. The third approach to examining depression is the disorder model which is based on psychopathology and the criteria of the *DSM-IV-TR* (2000).

Internalizing problems are also prevalent in adolescence. In the United States depressed mood has been experienced by 30-40% of adolescents and 3-4% experiencing multiple depressive symptoms with a smaller portion of the sample (2-4%) diagnosed with clinical depression (Compas et al., 1993). The prevalence of depressive disorder in adolescents, as defined by the *DSM-IV-TR* (2000), in Canada is estimated at 10.2 % (Nguyen et al., 2005).

Co-occurrence of Internalizing and Externalizing Problems

Externalizing and internalizing problems, despite the apparent differences in symptomology, are not necessarily mutually exclusive in an individual. Internalizing adolescents may act out aggressively, just as externalizing adolescents may exhibit internalizing problems, such as anxiety or depression (Oland & Shaw, 2005). The high co-occurrence rates between externalizing and internalizing problems, found in both clinical and community-based youth, support the argument that overlap exists between externalizing and internalizing problems (Angold, Costello, & Erkanli, 1999). The association between co-occurring externalizing and internalizing problems and cognitive distortions have been examined in community-based and incarcerated adolescents (Frey & Epkins, 2002; Leung & Wong, 1998). The results of these two studies support the association between specific cognitive distortions and co-occurring externalizing and internalizing problems, but are limited by the use of participants from Hong Kong,

incarcerated youth, and the limited number of actual studies to draw from which address this specific area of the cognitive distortions literature.

Prevalence rates of co-occurrence vary depending on whether the problem behaviours are operationalized as specific or general (Reitz et al., 2005). For example, Angold and Costello (1993) found that the co-occurrence for depression and conduct disorder or oppositional defiant disorder in community adolescents was 23-83%. Whereas, Garnefski and Diekstra (1997), using a more general category of problem behaviours, discovered that the co-occurrence between emotional problems and behavioral problems, in a large community sample, ranged from 29 to 38%. With respect to the prevalence of internalizing and externalizing problems, co-occurrence rates have varied. Overbeek, Volleberg, Meeus, Engels, and Luijpers (2001) reported low, but significant co-occurrence correlations (0.08 to 0.10) between internalizing and externalizing problems in a community sample. Conversely, in a sample of community-based youth, McConaughy and Skiba (1993) found that co-occurrence rates for internalizing and externalizing scores were 52% when measured with the CBCL. In another study of community-based youth, McConaughy and Achenbach (1994) found that co-occurrence rates for internalizing and externalizing ranged from 10.5 - 30% when based on parent's ratings on the CBCL. Despite the variation in prevalence rates of co-occurring internalizing and externalizing, researchers have recognized an existing "unassailable evidence of "comorbidity" between statistically derived syndromes" (p. 62), such as internalizing and externalizing (Angold et al., 1999).

Empirical Support for Co-occurrence

Support for internalizing and externalizing, as distinct syndromes, is robust within the literature (Achenbach 1991a; Brack, Brack, & Orr, 1994; McConaughy et al., 1992; Rietz et al., 2005). Furthermore, internalizing and externalizing problems have been studied in various adolescent populations, such as clinical (e.g., Baruch, Fearon, & Gerber, 1999), incarcerated (e.g., Frey & Epkins, 2002), and the community (e.g., Rönnlund & Karlsson, 2006). Researchers examining internalizing and externalizing problems in adolescents have typically focused on one or both of these problems, but rarely co-occurring internalizing and externalizing problems (Garnefski et al., 2005).

Research exploring solely internalizing, externalizing, alone or both, may be missing an important third variable: the co-occurrence of internalizing and externalizing problems. Studies from the past twenty years have consistently shown that internalizing and externalizing problems co-occur in both clinical and community-based children and adolescents (Achenbach, 1993; Garnefski & Diekstra, 1997; Youngstrom et al., 2003). For example, in a study of 2,700 community-based youth and adolescents, ranging in ages from 4-18 years, McConaughy and Skiba (1993) using the CBCL and the YSR, reported 42 to 44% co-occurrence between clinical levels of externalizing and internalizing scales.

Reitz et al. (2005), in a study designed to examine the structure of internalizing and externalizing problems, concluded, based on confirmatory factor analysis, that both internalizing and externalizing were unique constructs. These researchers also reported the co-occurrence of internalizing and externalizing in their sample of community adolescents. Rietz et al. concluded that the “comorbidity of externalizing and

internalizing problem behaviours remains an important feature during the period of adolescence” (p. 585). Supporting Rietz et al.’s conclusion, Wolff and Ollendick (2006), in their review of the literature, suggested that the prevalence of co-occurrence reaches a peak in middle adolescence.

In addition to Reitz et al. (2005), other research findings have supported the distinction between internalizing, externalizing problems, and their co-occurrence, by using them as distinct variables in studies examining various hypotheses. For example, Youngstrom et al. (2003) in a study of cross-informant agreement using YSR, TRF, and CBCL divided 189 referred youths ages 11-17 into four distinct groups. The groups, based on the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach, 1991a, 1991b, 1991c) cutoff scores, were designated as either pure externalizers, pure internalizers, comorbid, or neither. Research by Garnefski et al. (2005) and Frey and Epkins (2002), consisting of community and incarcerated adolescents respectively, have also used cut-off scores to divide participants into internalizing, externalizing, and co-occurring groups. The importance of these studies is that they recognized and examined internalizing and externalizing problems, not only as distinct syndromes, but also as co-occurring in their participants.

The studies cited have all used adolescent participants, but generalizability of their findings is problematic given that Frey and Epkins (2002) used incarcerated participants, and Youngstrom et al.’s (2003) participants were recruited from an outpatient clinic. Garnefski et al. (2005) and Reitz et al. (2005) used a community sample of adolescents from Holland, potentially limiting the generalizability to North American adolescents. The research cited did not specifically measure prevalence of co-occurrence,

as this was not the purpose. However, they are included to illustrate that co-occurrence is an important variable to examine in conjunction with internalizing and externalizing problems. Including co-occurrence in studies addressing internalizing and externalizing is important because if co-occurring internalizing and externalizing is a distinct entity, as suggested in the literature (Lewinsohn et al., 1995), neglecting to address the possibility that participants may be both internalizing and externalizing, may compromise results and conclusions because a subset of the participants have not been addressed.

Furthermore, variables such as cognitive distortions that may or may not be common across internalizing, externalizing, or co-occurring may provide valuable information to the researcher (e.g., etiology, group differences, and treatment options).

Studying co-occurrence is also important because of the potential consequences. Research has shown that co-occurrence may be linked to severity of psychopathology, a more negative prognosis with respect to development and functioning, poor treatment response, and increased affiliation with adolescents engaging in delinquent acts (Beyers & Loeber, 2003; Oland & Shaw, 2005; Talbott & Flemming, 2003). These consequences may distinguish co-occurring youth from internalizing or externalizing youth. Based on a review of the aforementioned studies, adolescents with co-occurring problems can be systematically distinguished from adolescents exhibiting depression or antisocial behaviours alone (O'Connor, McGuire, Reiss, Hetherington, & Plomin, 1998). The dissimilarities that set apart co-occurring youth, from youth with only internalizing or externalizing problems, are that the co-occurring youth tend to have, for example, more severe and chronic consequences (Youngstrom et al., 2003) than those with either internalizing or externalizing problems alone. Despite the preponderance of empirical

evidence of the existence and consequences of co-occurring internalizing and externalizing, few studies have included this distinction when examining community adolescents, leaving a gap in the internalizing and externalizing literature that needs to be addressed.

Underlying Factors in Internalizing and Externalizing Problems

An issue pertaining to internalizing and externalizing problems is whether they are the result of one underlying factor or multiple factors. Jessor and Jessor (1977) argue that one factor structure underpins adolescent externalizing problems. They categorized these problems as alcohol and drug use, delinquent behavior, and precocious sexual intercourse. Jessor and Jessor argued that unconventionality might be the underlying factor, and some research has supported this claim (e.g., Donovan & Jessor, 1985; Flannery, Williams, & Vazsonyi, 1999).

Alternatively, some studies have reported a two-factor structure and others three-factor structure in externalizing problems (e.g., Farrell, Kung, White, & Valois, 2000; Gillmore, Hawkins, Catalano, Day, & Moore, 1991). When internalizing and externalizing have been studied together, two separate factors have been found (Brack et al., 1994) leading to the conclusion that externalizing and internalizing are distinct forms of problems.

Rietz et al. (2005) conducted longitudinal factor analyses of the structure and stability of internalizing and externalizing problems. The participants were high school adolescents ($n = 650$ at time one and $n = 563$ at time two) between the ages of 13-15. Using the YSR to measure internalizing and externalizing problems, the results of the

study confirmed that internalizing and externalizing are two distinct constructs, but are also manifestations of a syndrome of problem behaviours.

Moreover, Reitz et al. (2005) found that the absolute stability (the construct's absolute level when measured over time) of problem behaviours remained consistent with clinical, subclinical, and normal groups. Thirty seven to 59% of the groups continued to engage in problem behaviours over a one year span supporting the suggestion that problem behaviours are stable during adolescence (Ferdinand, Verhulst, & Witznitzer, 1995). What is important to note is that the externalizing and internalizing problems exhibited by the participants in the Reitz et al. study may not have reached the highest prevalence of problems which have been shown to peak between 15 and 16 years old (e.g., Broberg et al., 2001; Walker et al., 2000).

Gender Differences

The findings in the literature support gender differences in internalizing and externalizing problems. Using the YSR on Swedish adolescents Broberg et al. (2001) discovered a higher prevalence of internalizing problems in girls when compared to boys. According to some research, adolescent girls are two times as likely as boys to become anxious and depressed, and also exhibit more co-occurrence between depression and anxiety than boys (e.g., Crick & Zahn-Walker, 2003; Lewinsohn et al., 1995; Zahn-Waxler et al., 2008). Conversely, boys tend to engage in more externalizing problems such as aggression, violence, and delinquency when compared to girls (e.g., Loeber & Stouthamer-Loeber, 1998).

These results suggest a distinct discrepancy in how girls and boys cope with the stressors of adolescence. Various factors have been hypothesized to explain the gender

differences in externalizing and internalizing problems such as interpersonal and self-evaluative differences, stress, quality of parental relationships, and self-concept (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Leadbeater, Kuperminc, Hertzog & Blatt, 1999).

Although the findings in the literature would suggest that girls and boys differ in their prevalence of externalizing and internalizing problems, the dissimilarities may not be as clear when taking into account a few alternate explanations. A potential caveat when examining the discrepancy between boy and girls is the type of aggression. Boys tend to engage in more physical aggression than girls (Coie & Dodge, 1998); consequently it is more observable. However, girls may be as aggressive but in a different manner. Crick and Grotpeter (1995) have hypothesized that girls may use friendships and status as weapons to hurt others, what Crick and Grotpeter called relational aggression. In contrast to boys, internalizing symptoms are more observable in girls who have higher rates of crying and sadness (Zahn-Waxler, Race, & Duggal, 2005). Gjerde (1995) reported that depressed boys expressed their depression directly by acting out against others. Thus, they are potentially viewed as aggressive as opposed to depressed (Block, Gjerde, & Block, 1991).

The results from the literature would suggest that girls do exhibit more internalizing problems than boys, but researchers should be aware of the possibility that girls may exhibit internalizing and externalizing problems in a different manner than boys. Scholars have suggested some potential pathways for the development of externalizing and internalizing problems, but the main focus of this study is on the cognitive mechanisms that are associated with the expression of internalizing and externalizing problems.

Development of Internalizing and Externalizing Problems

Externalizing Problems

Externalizing problems have been implicated in the development of conduct issues, delinquency in adolescence and in childhood, academic problems, criminality, and antisocial behaviour into adulthood (Deater-Deckard & Dodge, 1997). The study of the development of externalizing and internalizing problems has been approached from various theoretical positions. These two constructs encompass problems such as aggression, delinquency, and depression. They have been extensively studied from diverse theoretical, empirical, and clinical approaches. The range of consequences often associated with these behaviours makes the study of internalizing and externalizing problems of practical significance with respect to prevention, policy, and treatment.

A number of theories purport to explain the development of externalizing and internalizing problems. One of the first theories of the development of externalizing was proposed by Moffitt (1993). Moffitt's theory was based on the assumption that adjustment difficulties in boys are a precursor to externalizing behaviour. Moffitt posited two distinct pathways: child-onset and adolescent limited pathway. The theory posits that manifestations of psychopathology are present in early to middle childhood. This psychopathology is believed to stem from the interaction of such factors as poor parenting, poor peer relations, and biological difficulties such as cognitive deficits and hyperactivity (Moffitt, 1993). The evidence, based on a review by Moffitt, Caspi, Dickson, and Silva (2001), supports these theorized precursors to externalizing problems.

Girls are theorized to be comparably free of externalizing problems during early to middle childhood because of biological, cognitive, and social buffers present during

this period (Keenan & Shaw, 2003). This contention is partially supported by Moffitt et al.'s (2001) theory that, like boys, girls can also be tracked on two distinct pathways: childhood-onset and adolescent-limited pathway. However, girls tend to display less externalizing problems in childhood when compared to boys.

Adolescence is when girls tend to engage in more externalizing problems. The development of behavioral problems for boy and for girls is part of normal development according to Moffitt et al. (2001). Similar to boys, externalizing problems in girls has been hypothesized to stem from such factors as family dynamics and cognitive difficulties (Keenan & Shaw, 1997). The difference between boys and girls is that these predisposing factors do not tend to manifest themselves in girls until adolescence.

An alternative hypothesis has suggested that girls do engage in externalizing behaviour at an early age, but it is not as evident as boys' aggression (e.g., overt, violent). Crick and Grotpeter (1995) and Bjorkqvist, Lagerspetz, and Kaukianen (1992) argue that girls aggress differently than boys predominately with relational aggression, which is more difficult to observe and, therefore, measure.

Internalizing Problems

Theories explaining internalizing problems have posited a number of different factors in the development of these problems. Girls are hypothesized to develop internalizing problems in part due to socialization factors where girls are presumably taught to inhibit externalizing problems (Keenan & Shaw, 1997). Another theoretical model proposed by Nolen-Hoeksma and Girgus (1994) is that girls have more risk factors, such as childhood anxiety, gender role stereotypes, and stronger interpersonal orientations, often predisposing them to depression.

In an effort to consolidate the literature, Leadbeater et al. (1999) suggested a multivariate model of internalizing and externalizing problems. The broad categories of risk factors include the following: gender linked vulnerabilities, risk and protective factors, interpersonal and self-critical vulnerabilities, self-concept, stress, and quality of relationships with parents and peers. Leadbeater et al. argued that the gender differences in these risk factors may explain the discrepancy in externalizing and internalizing problems in adolescence.

In order to empirically test the model, Leadbeater et al. (1999) conducted a one year longitudinal study of 230 boys and 230 girls aged 11 -14. Using self-report questionnaire intended to measure the risk factors, the authors found that gender differences occurred/existed in the vulnerabilities, risk factors, and protective factors. Consistent with prior research (Leadbeater, Blatt, & Quinlan, 1995), internalizing symptoms were more common for girls than boys, and somatic and emotional symptoms increased over time for the girls whereas the boys' symptoms decreased. Also consistent with prior research, externalizing symptoms were reported more by the boys than the girls, but self-reported delinquency increased for both genders (Leadbeater et al., 1995).

Gjerde (1995) reported how the expression of externalizing and internalizing problems may differ between girls and boys. Internalizing problems expressed by boys may be manifested outwardly as aggression or hostility whereas girls may withdraw or ruminate over sadness. Therefore, internalizing problems may be misidentified as externalizing in boys or externalizing problems, manifested as withdrawal by girls, mistaken for internalizing.

Cognitive Distortions and Externalizing and Internalizing Problems

The broad overview of theories has highlighted a number of risk factors associated with the development of internalizing and externalizing problems. A factor not explicitly stated is the role of cognitions or more specifically cognitive distortions. The risk factors cited in these diverse theories are hypothesized to make girls and boys more vulnerable to engaging in internalizing and externalizing problems. Cognitive distortions have been empirically linked to both the manifestation of internalizing problems (e.g., Leung & Wong, 1998) and externalizing problems (e.g., Barriga et al., 2000). Given the empirical and theoretical link between distortions, internalizing, and externalizing, further exploration of the literature is warranted.

Externalizing Problems and Cognitive Distortions

Research specifically examining internalizing, externalizing, and cognitive distortions with adolescent participants is very limited. As such, this review includes studies that examine aggression or delinquency in relation to cognitive distortions because both of these behaviours are integral in the construct of externalizing. With respect to internalizing, studies exploring the link between cognitive distortions and depression, which are also few in number, are included in this review. The literature review highlights research involving adolescents, but many of the studies conducted have predominately been with children, thus some of these studies are included in the review in order to provide a broader overview.

The positive relationship between self-serving cognitive distortions and externalizing problems has been well supported in the literature. Cognitive distortions are an integral component of a well-established model of aggressive behaviour. Social

information processing theory (Crick & Dodge, 1994) has contributed to the study of cognitive distortions by its recognition that distortions are an essential part of information processing or more accurately, biased information processing in samples composed of school-age children (Dodge, 1980; Dodge & Coie, 1987)

As previously mentioned, Crick and Dodge (1994) conceptualized distortions as processing biases that can be specific to a particular situation or generalized processing tendencies. The distortions will gradually develop as inaccurate attitudes or beliefs, especially where risk factors are prevalent (Dodge, 1993; Dodge, Bates, & Pettit, 1990). As an example, Weiss, Dodge, Bates, and Pettit (1992), in a longitudinal study of kindergarten children, found that those children harshly disciplined developed more aggressive behaviours in school than the children who had not been harshly disciplined. Weiss et al. concluded that the aggressive children had developed maladaptive information processing which predicted school aggression six months into the school year.

Weiss et al.'s (1992) findings are similar to the results found by Dodge, Pettit, Bates, and Valente (1995). They concluded that a history of reported physical abuse in the first five years of the participants' lives was associated with later information processing patterns such as hostile attribution bias and a tendency to access aggressive responses. These processing patterns predicted later externalizing problem (such as aggression) in grades three and four.

A form of cognitive distortion associated with social information processing is hostile attribution bias. According to Dodge (1980), some aggressive boys have cognitive biases (distortions). When these boys are faced with ambiguous intent on the part of a

peer, the boys will tend to attribute hostile intent from the peer. There is a large body of research supporting distortions being manifested as hostile attributions and their positive association with aggression and antisocial behaviours among adjudicated adolescents and non-adjudicated children (Dodge, Price, Bachorowski, & Newman, 1990; Guerra & Slaby, 1989; Lochman & Dodge, 1994; Quiggle, Garber, Panak, & Dodge, 1992).

The link between self-serving and self-debasing cognitive distortions as variables specifically associated with externalizing and internalizing problems was examined in a study by Barriga et al. (2000). The researchers compared two groups of adolescents aged 13 to 19 years. One group contained incarcerated female and male participants; the other group consisted of male and female high school students. All participants completed the How I Think questionnaire (HIT; Gibbs et al., 1995) as a measure of self-serving cognitive distortions and the CNCEQ as a measure of self-debasing cognitive distortions. The YSR was used to measure internalizing and externalizing problems in both the incarcerated and high school groups. In addition to the YSR, records of misconduct obtained from prison officials, were used to further measure problems among the incarcerated youth. A comparison of the two groups showed that incarcerated adolescents had a significantly higher level of cognitive distortions, as measured by the HIT, and higher level of externalizing problems. Regression analysis showed that the self-serving distortions were uniquely associated with 14% of the variance for Total Problem behaviours, and the CNCEQ was uniquely linked with 11% of the variance for Total Problem behaviours. Furthermore, the study also found that self-serving cognitive distortions, as measured by the HIT, were a significant predictor of externalizing behavior, and self-debasing cognitive distortions, as measured by the CNCEQ, were

significantly associated with internalizing problems. These results are notable because they support the specific association of self-serving and self-debasing cognitive distortions to externalizing and internalizing problems respectively.

Barriga et al. (2000) found, as hypothesized, that incarcerated youth had significantly higher scores for the HIT and CNCEQ, and the internalizing and externalizing scale of the YSR than the high school sample. Although significant group differences emerged, the high school group also showed a significant association between type of cognitive distortion and internalizing or externalizing problems. These results suggest that self-serving and self-debasing cognitive distortions are associated with the externalizing, internalizing problems in both incarcerated and non-incarcerated adolescents, and that self-serving and self-debasing distortions are a significant variable in the study of adolescent (incarcerated and non-incarcerated) psychopathology (Barriga et al., 2000).

The results of the study are consistent with the hypothesized association between specific distortions and externalizing, internalizing problems. However, they could have been strengthened had the high school participants' externalizing and internalizing problems been reported by another informant in addition to the self-report measure. The rationale by Barriga et al. (2000) for obtaining observer data for incarcerated youth was to improve accuracy. Yet, this was not done with the comparison sample. The study attempted to match the incarcerated and community participants. As a result, the researchers discovered similar SES and distribution of externalizing and internalizing in both groups. In the community group, 41% of the participants were African American compared to 17% in the incarcerated group. Given this discrepancy, it can be argued that

the community group, although a comparison group, was not a very representative community sample.

Further support for Barriga et al.'s (2000) conclusions were found in a study of adolescent boys. This research compared 103 incarcerated and high school adolescent boys, aged 14 to 18, on antisocial behaviour; Liao, Barriga, and Gibbs (1998) reported a significant relationship between self-serving cognitive distortions and antisocial behaviour in both groups. Incarcerated participants were administered the HIT and the adapted self-reported delinquency (SRD) scale (Elliot & Ageton, 1980) which measures various criminal offenses. High school participants were used as a control group. As was expected, the delinquent group had higher levels of cognitive distortions, but cognitive distortions were also associated with antisocial behaviours in the high school group. An important implication from the above mentioned studies is that cognitive distortions are not only evident in incarcerated youth but in community-based youth as well. Although the levels of distortions between community-based and incarcerated youth may differ, the results support the contention that cognitive distortions are particularly evident in externalizing problems. Liao et al. (1998) findings suggest that self-serving cognitive distortions in the absence of other variables seem to be associated with externalizing problems. It should be noted that no other correlates were included in the study, and the relatively small sample size may limit the generalizability of these results.

Finally, Barriga et al. (2008), in an effort to support these previous findings, studied 239 males aged 10 to 19 years, from the island of Curacao. The authors reported that, when controlling for internalizing in a regression analysis, self-serving cognitive distortions were significant predictors of externalizing problems, whereas, self-debasing

distortions were not found to be significant predictors. Conversely, when controlling for externalizing, self-debasing cognitive distortions were significant predictors of internalizing problems, self-serving cognitive distortions were not found to be significant predictors of internalizing.

The findings cited strongly suggest that self-serving cognitive distortions, in the absence of other mediating variables, seem to be associated with externalizing problems. The inclusion of other variables associated with externalizing problems have been examined in the literature to explore the possibility that cognitive distortions are a potential mediator variable. One such study was conducted by Barriga et al. (2001), who examined the mediating effect of moral cognition, gender, and cognitive distortions on antisocial behaviour.

The researchers had 80 males and 105 females aged 16 to 19 complete a battery of measures including the YSR, HIT, and the CBCL. The researchers reported that lower moral self-relevance, less mature moral judgment, and heightened self-serving cognitive distortions were associated with high levels of antisocial behaviour. Barriga et al. (2001) also found that despite a mature moral judgment and moral self-relevance, cognitive distortions still partially mediated the association with antisocial behavior by enabling the individuals to rationalize or disengage their behaviours from self-censure (Bandura, 1991; Gibbs, 1991). The implication is that despite moral maturity and self-relevance, individuals are still able to rationalize or inhibit their moral judgment. This result provides support of both Bandura's (1991) disengagement hypothesis and Gibbs' (1991) assertion that distortions function by allowing the individual to rationalize behaviour.

Barriga and colleagues, in their series of studies, have provided strong support for the roles of cognitive distortions in externalizing behavior; similarly, other researchers have also found significant results. Guerra and Slaby (1990) found that the distortion of minimizing/mislabeling played a mediating role in aggressive behaviour in incarcerated adolescents. Studies of violent adolescents (Guerra & Slaby, 1989, Lochman & Dodge, 1994), male adolescent delinquents (Nas et al., 2005), and aggressive and adolescent boys with substance dependence (Giancola, Mezzich, Clark, & Tarter, 1999) all reported a significant association between self-serving cognitive distortions and aggressive or delinquent behaviour.

Internalizing Problems and Cognitive Distortions

Self-debasing distortions, unlike self-serving distortions, do not protect the individual, but through inaccurate cognitions debase the individual resulting in depression (Beck, 1967). This section focuses on studies of adolescents and their internalizing problems.

One of the primary hypotheses of Beck's (1967) theory of depression is the connection between cognitions and depression, specifically self-debasing cognitive distortions. The literature on children and depression is generally supportive of self-debasing cognitions being associated with depression (Hammen & Zupan, 1984; Kendall et al., 1990; Tems et al., 1993) as is the literature pertaining to adolescents (Abela & D'Alessandro 2002; Weems et al., 2001). All of these studies examined depression or anxiety and not the global construct of internalizing, although both depression and anxiety are key components of this construct. Studies exploring cognitive distortions and internalizing in adolescents are very few, and those that have been published focus on

both externalizing and internalizing problems. For example, Barriga et al. (2000) found that self-debasing cognitive distortions were specifically associated with internalizing problems. Two further studies that examined the role of cognitive distortions in differentiating internalizing and externalizing problems are those of Frey and Epkins (2002) and Leung and Wong (1998).

Frey and Epkins (2002) hypothesized that specific cognitive distortions would differentiate 177 adolescent offenders, ranging in ages from 12 to 18, in externalizing and internalizing behaviors. The youth were divided into four groups: aggressive-internalizing ($n = 22$), aggressive-noninternalizing ($n = 14$), nonaggressive-internalizing ($n = 27$), and nonaggressive-noninternalizing ($n = 73$). Results of the study showed that both internalizing groups had more self-debasing cognitions than the two noninternalizing groups as well as the noninternalizing-nonaggressive group. Frey and Epkins (2002) also found that self-serving distortions were endorsed by aggressive participants and self-debasing distortions by those self-reporting internalizing problems.

These results further support the specificity of distortions to either internalizing or externalizing problems (e.g., Barriga et al., 2000; Barriga et al., 2008). Despite these results, some of the findings showed that the aggressive only and internalizing only groups did not differ significantly in self-debasing distortions, suggesting that self-debasing distortions are also present in aggressive individuals. This would suggest the existence of co-occurrence between internalizing and externalizing.

A potential limitation with the Frey and Epkins (2002) study is the variation in the number of participants in the four groups (e.g., aggressive-noninternalizing $n = 14$, nonaggressive-noninternalizing $n = 73$, nonaggressive-internalizing $n = 27$, aggressive-

internalizing $n = 22$) potentially resulting in limited statistical power. Furthermore, a small percentage of the participants were female (23.7%), and a large percentage of participants were Hispanic (66.3%). These imbalances may hamper generalization to the general population especially with respect to females who typically report more internalizing problems than males (Loeber & Stouthamer-Loeber, 1997).

Frey and Epkins (2002) results were partially supported by those of Leung and Wong (1998), utilizing a much larger sample of participants from Hong Kong ($N = 405$ adolescents). They found that internalizing and externalizing problems could be differentiated by type of cognitive distortions in adolescents whose mean age was 15. Leung and Wong reported that a regression analyses indicated that both internalizing and externalizing problems were predictors of cognitive distortions. They also determined that internalizing problems had stronger associations, when compared to externalizing problems, to cognitive distortions. Regression analyses was utilized to partial out the effect of externalizing because of the high correlation with internalizing ($r = .58$). Leung and Wong (1998) reported that internalizing significantly accounted for 6-12% of the variance. They did not find a significant relationship between externalizing and cognitive distortions. However, these results may be questioned as Leung and Wong used the CNCEQ, which measures self-debasing distortions. As a consequence, association would not necessarily be expected given that self-serving distortions are related to externalizing problems (Barriga et al., 2000).

A finding from the aforementioned study is that as the severity of internalizing problems increased, so did the magnitude (at a quadratic rate producing a U-shaped curve) of the cognitive distortions. This suggests that cognitive distortions not only affect

the expression of internalizing problems but also the severity of these problems. Similar to Frey and Epkins (2002) work, the participants were divided into four groups composed of large numbers of individuals: for example, the control group had 215 participants compared to 16 in the externalizing group.

The findings reviewed thus far, in this section, have shown strong support for the specific association of self-serving and self-debasing distortions with externalizing behavior and internalizing problems, respectively, among adolescents (Barriga et al., 2000; Barriga et al., 2008; Frey & Epkins, 2002; Guerra & Slaby, 1990). These results are present in research focusing on incarcerated youth, and ethnically diverse high school students, suggesting that cognitive distortions are common among most adolescents engaging in externalizing problems. With respect to internalizing problems and cognitive distortions the findings, when taking into account the adult, children, and adolescent literature, also suggest an association between self-debasing cognitive distortions and internalizing problems.

Specific Cognitive Distortions

In this review, two general forms of cognitive distortions were identified: self-debasing and self-serving. Self-debasing distortions and self-serving distortions have been empirically and theoretically associated with internalizing and externalizing problems respectively (Barriga et al., 2000; Leung & Wong, 1998). Self-debasing cognitive distortions are operationalized by the CNCEQ which identifies four specific distortions: catastrophizing, personalizing, overgeneralizing, and selective abstraction. The HIT, which measures self-serving distortions, has been used to operationalize four specific self-serving distortions: self-centered, blaming others, minimizing/mislabeling,

and assuming the worst. Self-debasing and self-serving cognitive distortions fall under the broad category of cognitive distortions. Furthermore, these two categories contain specific distortions that have been empirically and theoretically derived. Thus, when identifying distortions such as assuming the worst or catastrophizing they are labeled as specific distortions in order to differentiate them from the general self-debasing and self-serving distortions.

I have reviewed a body of research that examines self-debasing and self-serving cognitive distortions. One of the studies cited, dealing with externalizing, explored specific self-debasing and self-serving distortions (e.g., Frey & Epkins, 2002). However, the internalizing literature revealed three studies examining specific self-debasing distortions (e.g., Frey & Epkins, 2002; Leung & Wong, 1998; Weems et al., 2001). Given that self-debasing cognitive distortions have been recognized for forty years (Beck, 1967), and self-serving distortions, as operationalized by Gibbs (1993), are relatively new, this disparity is not surprising.

An early study that found an association between a specific cognitive distortion and externalizing, internalizing problems was done by Quiggle et al. (1992). They reported that both internalizing and externalizing children exhibited attributions of hostile intent; this is conceptually similar to assuming the worse in the HIT questionnaire. In a partial replication of the Quiggle et al. study, Barriga et al. (2008) ran a regression analysis using specific self-serving cognitive distortions as predictors and internalizing problems as the outcome variable. The authors found that among male's aged 10 to 19, from the island of Curacao, assuming the worst was associated with externalizing

problems and “at least to a marginal degree” with internalizing, findings similar to those reported by Quiggle et al.

In their study of incarcerated adolescents, Frey and Epkins (2002) determined that participants with co-occurring internalizing and externalizing problems exhibited more assuming the worst and blaming others distortions than internalizing only participants. Frey and Epkins also reported that no significant differences occurred between the four groups (aggressive, internalizing, aggressive-internalizing and non-aggressive-non-internalizing) on the self-centered and minimizing distortions.

When examining self-debasing distortions, Frey and Epkins (2002) found that the internalizing and the co-occurring groups differed, in that the co-occurring group reported more selective abstraction, overgeneralizing, and catastrophizing. The Frey and Epkins study is of note because it is the only research, based on my exploration of the literature, which has examined both specific self-debasing and self-serving cognitive distortions in an adolescent population. Frey and Epkins (2002) found a significant difference between the co-occurring and internalizing groups, a result not fully supported by Leung and Wong (1998).

Leung and Wong (1998) divided their participants into four groups: pure internalizing, pure externalizing, mixed problem group (pure internalizers and externalizers), and a normal control group. Using the CNCEQ, they discovered that the pure internalizing and mixed problem group had significantly higher scores on all four of the specific self-debasing distortions than the normal control and pure externalizing groups. These results differ from those of Frey and Epkins (2002) where the co-occurring

group and internalizing group differed on all but the personalizing distortion. The authors of these two papers reached different conclusions with regard to internalizing problems.

Frey and Epkins (2002) conclude that “self debasing distortions may not be specific to internalizing problem...” (p. 563). Leung and Wong (1998) posit that whether an adolescent is internalizing, externalizing, or both, those internalizing will have significantly higher levels of self-debasing distortions. Barriga et al. (2008) supported the specific association between self-debasing cognitive distortions and internalizing, but also reported that self-serving cognitive distortions were more highly associated with externalizing problems. Furthermore, contrary to Frey and Epkins (2002) conclusions, self-debasing cognitive distortions were not significantly associated with externalizing problems.

In sum, Barriga et al. (2008) were able to show the specificity of self-serving and self-debasing cognitive distortions to externalizing and internalizing respectively in a sample of male adolescents. Based on these few studies, it would be very difficult if not impossible to come to a conclusion, regarding which specific cognitive distortions are associated with internalizing or externalizing problems, given the very disparate nature of the participants (community sample from Hong Kong, adolescent males from Curacao, and incarcerated adolescents from the United States).

Studies using clinical adolescent participants and the CNCEQ, to operationalize self-debasing distortions, have reported that adolescents with co-occurrence of conduct disorder, depression, and substance abuse catastrophized and personalized significantly more than participants with one or two diagnoses (Kempton, Van Hasselt, Bukstein, & Null, 1994). These authors also found that adolescents experiencing depression were the

most similar to the conduct disorder, depression, and substance abuse group in their specific cognitive distortions.

In contrast to the aforementioned study, Weems et al. (2001) found a significant association between overgeneralizing and selective abstraction and self-reported depression in a group of children and adolescents. When the participants were divided into youth and adolescents, correlations showed that adolescents' self-reported measures of depression were significantly associated with all four specific self-debasing cognitive distortions: catastrophizing, personalizing, overgeneralizing, and selective abstraction.

These results differ from those reported by Messer, Kempton, Van Hasselt, Null, and Buckstein (1994) and Garnefski et al. (2005), Messer et al. were only able to find the specific cognitive distortion of overgeneralizing differentiated psychiatrically hospitalized depressed adolescents from conduct disordered adolescents. Finally, Garnefski et al. conducted a study using the Cognitive Emotion Regulation Questionnaire (CERQ) and the YSR to measure internalizing and externalizing problems in 271 Dutch adolescents aged 12 to 18. The researchers found that adolescents in both the internalizing and co-occurring internalizing and externalizing group scored significantly higher on the CERQ for self-blame (c.f. personalizing) and rumination (c.f. selective abstraction) than the externalizing and control group.

The results of the studies cited present discrepant evidence as to what specific cognitive distortions or distortion are associated with internalizing, externalizing, or co-occurring problems in adolescents. The use of diverse participants from different countries, ethnicities, and diagnoses makes generalizing and definitive conclusions difficult. What can be concluded, despite different specific distortions associated with

internalizing or externalizing problems across studies, is that self-debasing and self-serving cognitive distortions are associated with externalizing and internalizing problems respectively.

The results of the studies cited also indicate that participants classified as co-occurring tend to exhibit the majority of the specific self-debasing cognitive distortions (Leung & Wong, 1998; Weems et al., 2001). With respect to the specific self-debasing or self-serving distortions, assuming the worst and blaming others (self-serving) have been reported for both externalizing and co-occurring groups (Frey & Epkins, 2002; Quiggle et al., 1992). On the other hand, internalizing participants have self-reported higher scores on personalizing, selective abstraction, and overgeneralizing (Garnefski et al., 2005; Weems et al., 2001). Internalizing problems, when controlling for externalizing, have been found to be a significant predictor of all four of the specific self-debasing distortions, with the highest variance explained by personalizing and overgeneralizing (Leung & Wong, 1998). Furthermore, internalizing and co-occurring participants reported higher mean scores, for all four specific self-debasing cognitive distortions, than those classified as externalizing and normal (Leung & Wong, 1998).

These results provide further support for the specificity of self-debasing cognitive distortions and internalizing problems, but it is apparent that there is no definitive answer as to which specific cognitive distortions are associated with internalizing, externalizing, or co-occurring categories. This stems from a dearth of studies examining both specific self-debasing and self-serving distortions in any adolescent population, or much less a community sample. The lone exception is the Frey and Epkins (2002) study, but the use of incarcerated adolescents, predominately (66%) Hispanic, make the results difficult to

generalize to the general population of adolescents. Also notable, in the studies cited, is the lack of participants from a North American community sample. Researching this specific population may provide further information on specific cognitive distortions that other studies have not been able to fully provide.

Thus far, the literature pertaining to cognitive distortions has been the focus, both general and specific, and strong support exists across various literatures for cognitive distortions utility in helping explain internalizing and externalizing problems. What is evident is that, although cognitive distortions are associated with behaviours relatively common in adolescence (e.g., depression, aggression, and delinquency), relatively few studies have examined these variables as broad constructs (i.e. externalizing and internalizing) among samples of community adolescents. Another common theme is that when researchers do use adolescents as participants, they invariably include an incarcerated or a clinical sample (e.g., Barriga et al., 2000; Weems et al., 2001). Community-based adolescents have been the exclusive focus of very few studies cited in this paper, but once again the results are difficult to generalize because of the ethnic composition of the participants, for example African American or Chinese (e.g., Barriga et al., 2001; Leung & Wong, 1998). Studies need to address the lack of a representative sample of adolescents (i.e. not clinical or adjudicated) and operationalize externalizing problems using measures that reflect realistic forms of aggression such as the YSR.

Research focusing on adolescents' externalizing problems that have been reviewed in this study operationalized aggression using self-report, parent, or teacher-report (e.g., Barriga et al., 2000; Deater-Deckard & Plomin, 1999; Frey & Epkins, 2002; Liao et al., 1998). Significantly fewer studies have focused specifically on community-

based adolescents (e.g., Deater-Deckard & Plomin, 1999; Deković et al., 2004). The literature pertaining to internalizing problems is even more limited than the externalizing literature for very much the same reasons as just cited.

Statement of Problem

In reviewing the literature, it becomes apparent that a paucity exists of empirical studies examining general and specific cognitive distortions and their association with externalizing problems in community-based adolescents. Even fewer studies have explored general and specific cognitive distortions association with internalizing problems, or co-occurring internalizing and externalizing problems, in conjunction with the aforementioned variables. Given the statistics, which report an estimated life time prevalence of 14% of the adolescent population in the United States having suffered from depression (Office of Applied Studies, 2005), the often dire consequence of internalizing problems such as suicide (Cicchetti & Toth, 1998) and the consequences of externalizing problems such as serious violence (Group for the Advancement of Psychiatry, 2005). This must be viewed as a substantial gap in the literature.

Through this review, cognitive distortions from differing theoretical models were examined. Yet, are the underlying concepts so different? Looking at the concept of distortions, it is evident that they are cross-theoretical. Within a sociological perspective, Sykes and Matza (1957) viewed distortions as misinterpretations that facilitated the “neutralization” of guilt when engaging in delinquent or antisocial behaviours. In social cognitive theory, Bandura (1996) argues that self-serving distortions allow for the disengagement of morals and values from actual behaviour. Despite the classifications and labels used to describe self-serving or self-enhancing cognitive distortions, it would

seem that agreement exists among theorists that they serve to either facilitate externalizing or internalizing problems respectively.

In this review the extant externalizing and internalizing literature as well as the cognitive distortions literature have been examined. Studies in this review indicate that cognitive distortions are theoretically and empirically associated with adolescent problem behaviours. What is missing from the literature is an empirical examination of the association between general and specific self-serving, self-debasing cognitive distortions and internalizing, externalizing, and co-occurring internalizing, externalizing problems in community-based adolescents.

Purpose

The program of research undertaken in this study provides an investigation of the relationship of specific and general self-debasing and self-serving cognitive distortions to self- and teacher-reported internalizing, externalizing, and co-occurring problems among adolescents. Behaviour rating scales are often utilized in assessing social and emotional functioning in both research and educational settings (Heckaman, Conroy, Fox, & Chait, 2000). Multiple informants (teacher, parent, and self-report) have been used to complete behaviour rating scales in the study of internalizing and externalizing problems (e.g., Deater-Deckard et al., 1998; Frey & Epkins, 2002), as have only self-report measures in research examining internalizing, externalizing, and cognitive distortions in adolescents (e.g., Barriga et al., 2000, Leung & Wong, 1998; Liao et al., 1998). The next section addresses the issue of disagreement between various informants such as teacher, parents and students.

Cross-Informant Disagreement

There exists a broad literature addressing the issue of cross-informant disagreement in the assessment of psychopathology in children and adolescents. Research has addressed such issues as the potential causes of such discrepancies (e.g., Berg-Nielsen, Vika, & Dahl, 2003), and the prognosis of psychological problems when informants disagree (Ferdinand, van der Ende, & Verhulst, 2007). Cross-informant disagreement is such a consistent finding in the literature that De Los Reyes and Kazdin (2005) claimed that it is among “the most robust findings in child clinical research”. Agreement among multiple informants of children’s and adolescent’s internalizing and externalizing problems is modest at best (Achenbach et al., 1987; De Los Reyes & Kazdin, 2005). In an often cited meta-analysis Achenbach et al. (1987), found the mean level of consensus between teacher and youth or parent and youth reported to be $r = .20$ and $.25$ respectively. These small correlations, according to Achenbach et al. (1987), indicate that no one informant can provide a complete picture, and, thus, each informant offers unique information. There is some evidence in the literature that certain informants are more valid sources of information, with respect to specific behaviours, than others.

When examining externalizing problems, more agreement exists among informants (parent or teacher) as compared to internalizing problems, which tend to be more often self-reported (Achenbach et al., 1987; Baruch et al., 1999; Kolko & Kazdin, 1993; Lee, Elliot, & Barbour, 1994). For example, a study of 506 adolescents indicated that the participants’ self-reported internalizing problems occurred at a higher rate when compared to teacher reports (Youngstrom, Loeber, & Stouthamer-Loeber, 2000). Furthermore, Stanger and Lewis (1993) using the Teacher’s Report Form (Achenbach,

1991b) and Youth Self-Report, found that no significant agreement occurred between teachers and other raters (i.e., parents, students) on internalizing problems.

These findings suggest that internalizing problems may not be noticed by teachers or parents within the school or home settings. Stanger and Lewis (1993) maintain that this may be the result of behaviours varying across situations. Thus, children may display internalizing problems in the presence of parents but not teachers or vice versa.

Conversely, externalizing problems, because they are typically observable and may cause disruption, are more likely to be noted by teacher or parent informants (Ferdinand et al., 2007). De los Reyes and Kazdin (2005) added to the explanation by suggesting that children's behaviour is more observable because they are typically more restricted in their daily activities and thus in more contact with those that are typically asked to rate their behaviours. These discrepancies between informants might also be attributable to differing motivations, or perceptions of what defines abnormal behaviour in a child, as well as cultural and social differences in what are considered problem behaviours (De los Reyes & Kazdin, 2005; Youngstrom et al., 2000). In sum, the reason for discrepancies in cross informant ratings remains in the domain of hypotheses, as the literature has "failed to explain informant discrepancies" according to De los Reyes and Kazdin (2007).

Although a "gold standard" source of data is missing on adolescents' internalizing and externalizing problems, the consensus in the literature is that multiple sources of information provide a more complete picture of the adolescents' behaviours across different settings (e.g., Achenbach, 2006; Baruch et al., 1999). Despite the recommendations from various researchers to employ multiple informants, very few of

the studies cited in this study have done so. In fact, the majority examine cognitive distortions and internalizing, externalizing problems, or each variable on their own using only the Youth Self-Report (Barriga et al., 2000; Garnefski et al., 2005; Leung & Wong., 1998). With respect to the CBCL and TRF, three studies examining a community sample used the CBCL (Barriga et al., 2001; Frey & Epkins, 2002; Schniering & Rapee, 2004), and no research cited in this study used the TRF.

This lack of teacher input into rating psychopathology of youth is predominant within the literature according to a comprehensive literature review by Mattison, Carlson, Cantwell, and Asarnow (2007). These researchers argue that the value of teacher observations in informing treatment and diagnosis is unknown because of the dearth of studies utilizing teacher reports. The value of using teachers as informants is bolstered by the findings that teachers tend to agree more with other informants than do parents. Kolko and Kazdin (1993) found that teachers' and youth ratings of internalizing and externalizing problems in a nonclinical sample were more similar than the parents' and youth ratings. Furthermore, teachers' reports tend to be more accurate than parental reports (Randazzo, Landsverk, & Ganger, 2003)

A consistent finding in the literature is that cross informant agreement is often very difficult to obtain (De los Reyes & Kazdin, 2005). In fact, even when behaviours are observed in similar contexts discrepancies still arise. There is little doubt that even when multiple informants are used to rate psychopathology the level of agreement is small. The practical ramification of these discrepancies is how to decide which informant is the most valid. The prevailing wisdom within the psychopathology assessment literature is to utilize multiple informants such as teachers, parents, clinicians, and other individuals who

know the adolescent (Kraemer, Measelle, Ablow, Essex, Boyce, & Kupfer, 2003). Yet, even with the use of all possible informants, without an objective observer of the youth's behaviour the assessment will never be completely valid according to Berg-Nielsen et al. (2003). Furthermore, the use of all possible informants would be problematic in a clinical setting even when assessing one individual, much less when conducting research with multiple participants.

Given the lack of clear guidance, within the literature as to which informant source is best, the YSR and TRF were used in the present study, as they are some of the most widely used instruments in clinical settings or research (Berg-Nielsen et al., 2003). The TRF was chosen as it has not been used in the internalizing, externalizing, and cognitive distortion literature. Furthermore, the focus of this study is on a community sample of adolescents and it would stand to reason that teachers could be a valid source of information of a student's behaviour in a broader scope than might be gathered from the home. The advantage teachers may have over other informants, such as parents, is the opportunity to seeing youth in a structured environment as well as having a comparison group (classmates) which a youth's behaviour can be compared against (Kamphaus & Frick, 2002). The opportunity to have a comparative group, by which to assess an adolescent's behaviour as normative, may be why parents are not as accurate as teachers, and this may confer an advantage of teacher ratings over parents' ratings of behavioural problems (Randazzo et al., 2003).

Rationale

The theoretical implications of this study are that an understanding of the cognitive mechanisms and specific cognitive distortions underlying internalizing and

externalizing problems in adolescents may further the literature by providing an empirical and theoretical basis for the study of psychopathology in community-based adolescents. The use of the HIT and the four-category typology of self-serving cognitive distortions in this study may extend the theoretical work of Gibb's and colleagues (Barriga & Gibbs, 1996; Gibbs, 1993; Gibbs, et al., 1995) to a more representative sample in the community than incarcerated adolescents.

A better understanding of internalizing, externalizing, and co-occurring problems and the general and specific cognitive underpinnings may make prevention and treatment programs easier to develop and implement. Numerous prevention programs have been designed to address depression, for example The Best of Coping: Developing Coping Skills Program (Frydenberg & Brandon, 2002), and aggression or antisocial behaviour in adolescents such as the EQUIP program (Gibbs et al., 1995), and the Coping Power Program (Lochman & Wells, 1996).

Many of these programs have cognitive components, therefore, addressing general self-debasing or self-serving distortions in addition to specific cognitive distortions would allow these programs to better serve their clients. Furthermore, if specific distortions were identified with the use of the HIT or CNCEQ as being predominant in internalizing, externalizing, or co-occurring clients, counselling involving cognitive therapy could be more efficacious by targeting these specific distortions for treatment (Sanders & Wills, 2005).

Primary Research Questions and Hypotheses

A number of studies were reviewed and critically evaluated in the previous sections. These studies provided an empirical and theoretical grounding to the current

study. Three studies in particular have informed the current study with respect to results and methodology. Leung and Wong (1998) reported that self-debasing cognitive distortions significantly predicted, or were specific to, internalizing problems in a community sample of Chinese adolescents. Barriga et al. (2000) also reported that self-debasing cognitive distortions predicted internalizing problems but also found that self-serving cognitive distortions significantly predicted externalizing problems in a sample of community-based and incarcerated adolescents. In a third study, Frey and Epkins (2002) examined specific self-debasing and self-serving cognitive distortions and their relationship to youth categorized as aggressive-internalizing, aggressive-noninternalizing, nonaggressive-internalizing, and nonaggressive-noninternalizing in a sample of incarcerated male adolescents. In a similar fashion, Leung and Wong (1998) also divided their sample into categories. The results from these two studies provided an indication of which specific distortions were related to which problem category. The current study will endeavor to extend and add to the work of Leung and Wong (1998), Barriga et al. (2000), and Frey and Epkins (2002) by addressing some of the methodological limitations which hamper generalization of their results. Frey and Epkins' (2002) study focused on incarcerated adolescents, as did Barriga et al. (2000) but with the inclusion of a community based comparison group. Both studies had sample sizes of less than 200, with the Barriga et al. (2000) community sample having 66 participants. As such, the current study will focus specifically on a large sample of community-based adolescents, in order to improve the generalizability to a specific population. Leung and Wong's (1998) study had large sample size of community based adolescents ($N = 405$) but did not include a questionnaire designed to measure self-serving cognitive distortions. The current study

utilized the CNCEQ and HIT measures of self-debasing and self-serving distortions respectively in order to provide a more valid assessment of distortions.

The work of Leung and Wong (1998) and Frey and Epkins (2002) added to the extant literature by looking beyond general cognitive distortions and focusing on specific distortions as they relate to problem categories. The current study endeavored to replicate their findings beyond their particular samples to a sample of Canadian adolescents, furthermore this study will look beyond between category differences and examine within category differences as they relate to specific distortions.

With respect to participants, all three studies included male and females but with notable characteristics that may influence generalizability. For example Frey and Epkins' (2002) sample was incarcerated and predominantly Hispanic (66%), Barriga et al. (2000) community comparison group was 41% African American, and Leung and Wong's (1998) participants were all from high schools in Hong Kong. As such the result of the current study will extend these researchers findings beyond their particular participants to a Canadian sample of adolescents.

Finally, only the Frey and Epkins (2002) study utilized multiple informants to categorize youth (e.g., CBCL). In the current study the YSR was used in order to provide a more reliable means of categorizing youth, addressing the methodological shortcomings of the Leung and Wong (1998) study. The previous work of Barriga et al. (2000), Frey and Epkins (2002), and Leung and Wong (1998) have provided results which have broadened the understanding of the relations between cognitive distortions and internalizing and externalizing problems. The current study was designed to both

replicate and extend the work of previous researchers, but of these three in particular, to a broader community sample of Canadian adolescents.

The research questions were chosen in order to guide the current research and provide a clearer understanding of the relationship between general and specific cognitive distortions, internalizing, externalizing, and co-occurring problems among adolescents in the community. The research questions addressed and the hypotheses were as follows:

1. What is the association between self-serving cognitive distortions and self-debasing cognitive distortions and externalizing and internalizing problems respectively? Specifically, are self-serving cognitive distortions significantly and specifically associated with externalizing problems, and are self-debasing cognitive distortions significantly and specifically associated with internalizing problems?

According to both theory and empirical evidence, a strong association exists between self-serving distortions and externalizing problems (Bandura et al., 1996; Barriga et al., 2000, Barriga et al., 2008; Liao et al., 1998) among incarcerated and community-based youth. Self-debasing distortions have also been theoretically linked to internalizing (e.g., Beck, 1967) and empirically linked to internalizing problems in adolescents (e.g., Barriga et al., 2000). Furthermore, studies have found that the type of cognitive distortions, self-debasing, or self-serving, are specifically associated with either internalizing or externalizing problems respectively (Frey & Epkins, 2002; Leung & Wong, 1998).

Therefore, it is hypothesized that self-serving distortions will be significantly and more specifically associated with externalizing problems than self-debasing distortions.

Conversely self-debasing distortions will be significantly and more specifically associated with internalizing problems than self-serving distortions.

2. What is the relationship between cognitive distortions, age, and gender in the prediction of externalizing and internalizing problems? Age and gender are empirically associated with externalizing and internalizing problems (e.g., Achenbach & Rescorla, 2001) and therefore may confound the effects of self-serving cognitive distortions on externalizing problems, and self-debasing cognitive distortions effect on internalizing problems. Therefore, the goal of this research question is to provide an explicit examination of self-serving and self-debasing cognitive distortions contribution to the prediction of externalizing and internalizing problems.

Based on prior research, it is hypothesized that self-serving cognitive distortions, when gender and age are controlled, will be uniquely and significantly associated with externalizing problems, conversely self-debasing cognitive distortions will be uniquely and significantly associated with internalizing problems (e.g., Barriga et al., 2000).

3. Are there significant differences among adolescents categorized as internalizing, externalizing, co-occurring, or no problem with respect to their self-reported specific self-serving (self-centered, blaming others, minimizing/mislabeling, and assuming the worst), or self-debasing (catastrophizing, personalizing, overgeneralizing, selective abstraction) cognitive distortions. Specifically, are there between and within problem category differences with respect to self-reported specific self-serving and debasing cognitive distortions.

The extant literature addressing the issue of general self-serving cognitive distortions and their association with externalizing problems shows a significant

relationship between self-serving cognitive distortions and externalizing (Barriga et al., 2000). Similarly, general self-debasing cognitive distortions and internalizing have also been empirically linked in the literature (Leung & Wong, 1998). Given these findings, and the underlying theories of self-debasing and self-serving cognitive distortions, it can be hypothesized that specific self-serving or debasing distortions would be associated with externalizing and internalizing problems respectively.

What is less clear is whether certain specific cognitive distortions are more or less associated than other specific distortions between and within problem categories. Which specific self-serving or self-debasing distortions are associated with co-occurring, internalizing, externalizing, and no problem categories has yet to be consistently examined in the literature, and has not, to the author's knowledge, been explored with a North American adolescent community sample.

Based on the limited research of between problem category differences, it is hypothesized that the externalizing category will report higher levels of the specific self-serving cognitive distortions of assuming the worst and blaming others when compared to the co-occurring, internalizing, and no problem categories (Frey & Epkins, 2002; Quiggle et al., 1992). It is hypothesized that the internalizing category will report higher levels of the self-debasing cognitive distortions of personalizing, selective abstraction, and overgeneralizing when compared to the co-occurring, externalizing, and no problem categories (Garnefski et al., 2005; Leung & Wong, 1998; Weems et al., 2001). To the present author's knowledge, no published empirical studies have examined within problem category differences for specific self-serving and debasing cognitive distortions.

Given the lack of empirical results, the analyses for this portion of the research question will be exploratory, thus no hypotheses will be presented.

4. This research question examines which of the different specific self-serving or self-debasing cognitive distortions is better able to predict self-reported externalizing, internalizing problems, respectively, in a community sample. Therefore, which of the specific self-serving cognitive distortions, self-centered, blaming others, minimizing/mislabeling, or assuming the worst, most strongly predict externalizing problems, and which of the specific self-debasing cognitive distortions, catastrophizing, personalizing, overgeneralizing, or selective abstraction, most strongly predict internalizing problems?

Two studies, to the author's knowledge, explicitly examined self-serving cognitive distortions as measured by the HIT, and self-debasing cognitive distortions as measured by the CNCEQ (e.g., Barriga et al., 2008; Frey & Epkins, 2002). Both of these studies looked at specific self-serving and self-debasing cognitive distortions and their respective relationship with externalizing and internalizing problems.

Frey and Epkins (2002) analyzed their data using MANOVA, thus not providing an answer as to which specific cognitive distortion was more predictive of internalizing or externalizing. Barriga et al. (2008) analyzed their data using hierarchical regression, but their analyses regressed self-debasing cognitive distortions on externalizing problems and self-serving-cognitive distortions on internalizing problems. Consequently, their results do not provide a basis from which to make hypotheses regarding which specific self-serving cognitive distortions is the most predictive of externalizing, or which self-debasing cognitive distortion is the most predictive of internalizing.

Two studies that examined internalizing problems and specific self-debasing cognitive distortions may provide a preliminary indication of which distortions are predictive of internalizing problems. Garnefski et al. (2005) reported that selective abstraction and personalizing were the only self-debasing cognitive distortions significantly predictive of internalizing, whereas Weems et al. (2001) found overgeneralizing and selective abstraction as the strongest predictors of internalizing problems.

Both of these studies differed from the current study, in that Garnefski et al. (2005) results were based on a Dutch sample and Weems et al. (2001) participants were clinically referred, making them less than ideal comparison groups to the current study. Given the lack of consistent or comparable results this research question will be exploratory, and will endeavor to provide a preliminary answer as to which specific cognitive distortions are the most predictive of internalizing and externalizing problems in a community sample.

CHAPTER 3

METHOD

Participants

Participants for this study were 389 adolescents ($n = 182$ males, $n = 207$ females) who were enrolled in grades eight ($n = 123$) and ten ($n = 266$). These participants were drawn from 25 classrooms and were attending one of four urban secondary schools in Western Canada. Ages of the participants ranged from 12 to 17 years ($M = 14.29$, $SD = 1.01$). Participants from grade 8 ($M = 12.93$, $SD = 0.32$) were recruited from English and Science classes, and grade 10 participants ($M = 14.92$, $SD = 0.42$) were recruited from Planning 10, a required course for grade 10 students in the province in which the study took place.

Participants were asked to provide demographic information on their family composition and ethnicity (see Appendix A). According to the participants' reports, 66.9% ($n = 255$) lived with both parents, 15% with their mother ($n = 57$), 1.8% with their father ($n = 7$), 7.1% with mother and stepfather ($n = 27$), 1.6% with father and stepmother ($n = 6$), and 7.6% with other adults ($n = 29$). To facilitate group comparison, participants were divided by grade (8 or 10). The family composition is presented in Table 7.

The ethnic composition of the participants was 51.5% European ($n = 195$), 1.6% First Nations ($n = 6$), 4% Indo-Canadian ($n = 15$), 25.6% Asian ($n = 97$), 2.1% Latin American ($n = 8$), 1.6% African or Caribbean ($n = 6$), and 13.7% Other ($n = 52$), a category used to describe ethnic backgrounds not described by the other categories, for example Arab (e.g., Egyptian) or West Asian (e.g., Turk). Table 8 presents data regarding the ethnic composition of the sample by grade.

Table 7. Family Composition of Grade Eight and Ten Participants

Family	Grade Eight		Grade Ten	
	<i>n</i>	Percent	<i>n</i>	Percent
Both Parents	80	67.2	175	66.8
Mother only	23	19.3	34	13.0
Father only	3	2.5	4	1.5
Mother and stepfather	5	4.2	22	8.4
Father and stepmother	3	2.5	3	1.1
Other adults	5	4.2	24	9.2

Table 8. Ethnic Composition of Grade Eight and Ten Participants

Ethnicity	Grade Eight		Grade Ten	
	<i>n</i>	Percent	<i>n</i>	Percent
European	37	31.1	158	60.8
First Nations	2	1.7	4	1.5
Indo Canadian	5	4.2	10	3.8
Asian	52	43.7	45	17.3
Latin American	3	2.5	5	1.9
African or Caribbean	3	2.5	3	1.2
Other	17	14.3	35	13.5

When comparing ethnic composition of the school districts to the study sample, it was found that district one had a very similar distribution of ethnicities, according to Statistics Canada (Canada, 2008) 2006 census data for that urban area. District two also had a similar ethnic composition as the study sample, with the exception being that European ethnicity accounted for 44% of the district, whereas in the sample European ethnicity accounted for 18%. It should be noted that this school provided a relatively

small number of students and thus might not be indicative of the ethnic population of the school as a whole.

Procedures

Once university ethics and school board approval for conducting research was obtained, school administrators in the two school districts in which approval had been obtained (principals and vice-principals) were invited to have their school participate in the study. According to Statistics Canada (2008) the median household incomes for the two municipalities containing the two school districts were fairly similar, indicating similar SES levels for the students participating in the study. Specifically, the median annual income of municipality containing school district one was \$58,259, the median annual income of the municipality containing school district two was \$51,257; the provincial median was \$54,737. The municipal and provincial median incomes indicate that school district one is above the median income and school district two below the median income, although by a relatively small margin. Based on the median income data participants from both school districts one and two could be considered to have lower middle to middle class SES.

Four schools, two secondary (grades 9 to 12), and two middle schools (grades 6 to 8), ultimately agreed to participate in this study. The administrators of these schools then asked their grade eight and ten teachers if they were willing to have their classes participate in this study. Interested teachers were given information about the study and the requirements of students and teachers at department meetings that were held at their school.

As part of the study, teachers were asked to complete a rating of student behaviour scale (Teacher Report Form, TRF; Achenbach & Rescorla, 2001) for each of their students that agreed to participate in the study and who had also received parent/guardian consent to participate. It was emphasized to the teachers and administrators that student participation in the study was not contingent on the completion of the TRF by the teachers. An honorarium of \$50.00 was offered to the teachers for completing the TRFs, as well as an offer to provide an in-service or class presentation to teachers or students respectively on internalizing, externalizing or other mental health issues by the investigator who is a trained clinician with expertise in the area of adolescent psychopathology.

Once the participating classes were established, a letter describing the study along with the parent/guardian consent forms and participant assent forms (see Appendices B & C) were distributed to the students. In order to be eligible to participate in this study students were expected to read English at a grade five level, which corresponds to the minimum grade level required to complete the measures used in this study. Furthermore, it was emphasized to the students that they could not participate without parental consent and student assent. The parental consent forms were returned by the students to their respective teachers in a sealed envelope.

After parental consent and student assent forms were collected, teachers were asked to identify participating English as a second language (ESL) students in their class. Three students in total were identified as ESL; the researcher consulted with the students' ESL teacher to determine whether they were capable of completing the study questionnaires, one student was excluded from the study because they could not read

English at the required level. Of the 604 students provided with consent and assent forms, 427 received parent/guardian permission to participate and provided assent, resulting in a total participation rate of 71%. The range of participation rates across the 25 classrooms across the four schools, ranged from 62% to 100%. A detailed description of individual school participation, return and absentee rates are provided in Appendix D. As an incentive for the students to return the parental consent forms, students were told that those who returned signed parental consent forms, regardless of whether or not parental permission was given, would be eligible to win a \$100.00 gift certificate from a local computer games and music store.

Once student and parental consent forms were collected the investigator compiled the names of students who were given parental permission, and who had agreed to participate in the study. Through discussion with the participating teachers or teacher overseeing the project within each school, a specific date or dates for the administration of the questionnaires was agreed upon. As part of the study, the 19 participating teachers were asked to complete the TRF for each participant. Written instructions for the completion of the TRF were provided for the teachers, along with a list of the names of participating students. Teachers were asked to complete the TRFs during the class time in which their students completed the study questionnaires. If the teachers were unable to complete the TRFs during the allotted class time they were given a week to complete the remaining TRFs. The teachers who agreed to complete the TRFs beyond the class time were E-mailed a reminder three days prior to the collection date and provided the date that the researcher would be collecting the completed TRFs. A total of 19 teachers across 25 classes agreed to participate in this study. Three teachers were absent on the day the

questionnaires were administered to their class. Return rates for the TRF were as follows: School 1 (76%), School 2 (82%), School 3 (59%), School 4 (71%).

On the day of the administration of the questionnaires, participants were separated from the students not participating in order to minimize distractions for those completing the questionnaires. Students whose parents had not permitted participation, or students who chose not to participate, were assigned work by the classroom teacher to complete while participating students completed the study questionnaires.

Prior to the distribution of the questionnaires, the limits of confidentiality cited in the parental and student consent forms, the students' right to refuse participation, and to withdraw from the study at anytime without any consequences was reiterated. Students were also informed that the information gathered would be confidential, as such, names were not to be used on any of the self-reports except for the demographic questionnaire.

Once the questionnaires were distributed, the investigator provided directions on protocol (e.g., when to begin, what to do when finished) and how to complete the self-report questionnaires. Questions pertaining to the self-report questionnaires were answered by either the investigator or a graduate level research assistant. Students completed the self-report questionnaires in a single session lasting approximately 30 to 60 minutes.

Given that this study could reveal, through the Youth Self-Report (YSR), potentially serious emotional or behavioural issues, self-reported scores indicating high levels of internalizing or externalizing were monitored and addressed according to the University of British Columbia ethical standards. If the internalizing or externalizing *T* scores on the YSR were greater than 63, considered in the clinical range (Achenbach &

Rescorla, 2001), the participants' parents or primary caregiver was notified; a total of 76 parents or guardians were notified by the researcher. The parents or primary caregivers notified represent 20% of the total sample, which is lower than the expected range of 25-30% reported by Achenbach and Rescorla (2001). It should also be noted that all participants were given a list of community services (e.g., mental health centers, suicide hotline) as part of their questionnaire package.

Measures

Self-serving Cognitive Distortions

The *How I Think Questionnaire* (HIT; Barriga et al., 2001; see Appendix E) was designed to measure self-serving cognitive distortions in externalizing youth. The measure is comprised of a total of 54 items and is typically completed in 5 to 15 minutes. The measure contains four categories of distortions (self-centered, blaming others, minimizing/mislabeling, and assuming the worst). The 39 items in the four scales reflect the four categories of antisocial behaviour described in the *Diagnostic and Statistical Manual of Mental Disorders* (APA, 1994) with diagnosis of oppositional defiant (disrespect for rules, laws, or authorities), and lying, theft, cheating and physical aggression. For example, the item "It's no use to try to stay out of fights" represents an assuming the worst cognitive distortion item applied to physical aggression.

Participants are asked to respond to items along a six-point likert-type scale with endpoints of "agree strongly" to "disagree strongly." Participants rate how much each statement reflects their thinking over the last six-month period in the four categories of distortions. For example, self-centered (e.g., "If I see something I like, I take it"), minimizing/mislabeling (e.g., "People need to be roughed up once in awhile"), blaming

others (e.g., “People force me to lie when they ask me too many questions”), assuming the worst (e.g., “You should hurt people first before they hurt you”).

Included in the HIT is an eight-item Anomalous Responding Scale designed to screen for socially desirable or suspect responding. Scores above 4.25 indicate anomalous responding (Barriga et al., 2001). Seven of the 54 items are prosocial statements which are not scored, but included to make the HIT less threatening, (e.g., “I am generous with my friends”) (Barriga & Gibbs, 1996). The reading level required for the HIT is 4th grade as measured by the Grammatik computer program (Wampler, 1988).

Empirical evidence exists indicating that the psychometric properties of the HIT are good. Overall, internal consistency as assessed by Cronbach’s alpha is .96, with the internal consistency of the subscales ranging from .63 to .92 (Barriga et al., 2001).

Barriga et al. (2000) found concurrent validity when comparing the HIT to measures of delinquency and externalizing behaviour. In the present study, internal consistency was measured using Cronbach’s alpha. The alpha coefficient for the overall HIT score was .94. The alpha coefficients, in the present study, for the HIT subscales were as follows: self-centered, .85; blaming others, .81; minimizing/mislabeling, .83; and assuming the worst, .86.

Self-debasing Cognitive Distortions

The *Children’s Negative Cognitive Error Questionnaire* (CNCEQ; Leitenberg et al., 1986; see Appendix F) is a 24-item measure of self-debasing cognitive distortions which can be completed in approximately 15 minutes. The CNCEQ measures four self-debasing cognitive distortions: overgeneralizing, personalizing, selective abstraction, and catastrophizing. The participants are asked to respond along a five-point likert-type scale

with endpoints from *not at all like I would think* (1) to *almost exactly like I would think* (5). Participants are asked to read hypothetical vignettes and a thought in response to the vignette. Each item is a two or three line description of a hypothetical event which is followed by a statement that indicates one of four cognitive errors (catastrophizing, personalizing, selective abstraction, and overgeneralizing). Each item reflects an area in a youth's life: athletics, social, and academic. For example, "You forget to do your spelling homework. Your teacher tells the class to hand them in. You think, 'The teacher is going to think I don't care and I won't pass.'" This item illustrates catastrophizing in the academic domain.

The internal consistency of the CNCEQ was reported as .89 (Leitenberg et al., 1986). The CNCEQ was found to discriminate between internalizing and externalizing problems (Leung & Wong, 1998). In the present study, internal consistency was measured using Cronbach's alpha. The alpha coefficient for the total CNCEQ score was .91. The alpha coefficients, in the present study, for the CNCEQ subscales were as follows: catastrophizing, .74; personalizing, .74; selective abstraction, .61; and overgeneralizing, .78.

Internalizing and Externalizing Measures

The present study utilized self-reports of both internalizing and externalizing problems in addition to teacher reports. This methodology provides a broader perspective on the adolescents' problems by including an observer of the youth's behaviours from a different context, in this case, the classroom. Based on Achenbach et al. (1987) meta-analysis of the literature, the researchers conclude that data from one other source, besides the youth, would provide a "reasonable sample of what would be provided by

other informants” (p. 227). Thus, different information from the adolescent may be provided by the teacher because of different context (Achenbach et al., 1987; Stanger & Lewis, 1993). As an example, there is a general agreement among researchers that externalizing problems are more often reported by others such as teachers, and internalizing problems more likely to be reported by youth (Achenbach et al., 1987; Kolko & Kazdin, 1993).

Self-reported Internalizing and Externalizing Behaviour

The Youth Self-Report (YSR; Achenbach & Rescorla, 2001; See Appendix G) is a widely used self-report measure of youth and adolescents’ (11 to 18 years) problem behaviours and specifically two broad band scales (internalizing and externalizing). The YSR provides a Total Problem score, Internalizing Behaviour score (consisting of the Somatic Complaints, Withdrawn/Depressed, and Anxious/Depressed syndromes), and Externalizing Behaviour scores (consisting of the Rule-Breaking Behavior and Aggressive Behavior syndromes). The Social Problems, Thought Problems, Attention Problems syndromes, and Total Problems score were not used in the current study, as they do not directly reflect externalizing and internalizing problems as operationalized in this study (Muris, Meesters, & van den Berg, 2003; Rönnlund & Karlsson, 2006).

The YSR consists of 105 problem items with 14 measuring social desirability and one open ended question regarding physical problems. Participants are asked to answer how often they experienced the problem stated in the past six months. Each item has three choices: 0 (*Not True*), 1 (*Sometimes or Somewhat True*), or 2 (*Very True or Often True*). Items reflecting the Anxious/Depressed subscale include such statements as “I cry a lot,” “I am too fearful or anxious.” Items reflecting Aggressive Behavior include “I

argue a lot” or “I am mean to others.” The time required to complete the YSR is approximately 15 minutes. Using Cronbach’s coefficient alpha the internalizing scale shows very good internal consistency estimated at .90, and .90 for the externalizing scale (Achenbach & Rescorla, 2001). In the present study, internal consistency was measured using Cronbach’s alpha. The alpha coefficient, in the present study, for the Internalizing and Externalizing scales were .88 and .87, respectively.

Teacher-reported Internalizing and Externalizing Behaviour

The Teacher Report Form (TRF; Achenbach & Rescorla, 2001; See Appendix H) is a teacher report measure that comprises 120 problem items and is designed to measure problem behaviours, social adaptive functioning, and school performance, constructs similar to the YSR. For the purposes of the present study, only the internalizing and externalizing scales behaviour scores were utilized. The internalizing scale consists of 33 items measuring Somatic Complaints, Withdrawn/Depressed, and Anxious/Depressed syndromes. The externalizing subscale consists of 32 items measuring Rule-Breaking Behavior and Aggressive Behavior syndromes. As with the YSR, the Social Problems, Thought Problems, Attention Problems syndromes, and Total Problems score were not used, as they do not directly reflect externalizing and internalizing problems as operationalized in this study (e.g., Muris et al., 2003; Rönnlund & Karlsson, 2006).

Teachers rate students on 120 problem items that are rated on a three-point scale (0 (*Not True*), 1 (*Sometimes or Somewhat True*), or 2 (*Very true or Often True*)). The TRF and YSR share 90 common items. An example of an item not in the YSR, but in the TRF is, “explosive and unpredictable behaviour” indicating aggression. The time required to complete the TRF is approximately 15 minutes for each student. Reliability of the TRF is

very good; Cronbach's coefficient alpha was reported as .90 for the internalizing scale and .95 for the externalizing scale (Achenbach & Rescorla, 2001). In the present study, internal consistency was measured using Cronbach's alpha. The alpha coefficient, in the present study, for the internalizing and externalizing scales was .72 and .83, respectively.

Internalizing, Externalizing, and Co-occurrence Categorizing Criteria

As part of the primary analyses in the current study, participants were categorized into problem categories based on their YSR and TRF scores. The next section presents a brief overview of how previous researchers have addressed the issue of categorization, and an explanation of the categorization strategy adopted in the current study.

According to Youngstrom et al. (2003) the measurement of co-occurrence is fraught with theoretical and methodological difficulties making the measurement of co-occurrence inconsistent across studies. The measurement of co-occurrence, in the current study, was based on prior research that examined cognitive distortions, internalizing, externalizing problems, and co-occurrence in adolescents.

A strategy that has been used in the literature is the use of cut-off scores to differentiate between clinical and non-clinical participants. *T* scores between 60 and 63 are considered borderline on the internalizing and externalizing scales of the YSR and TRF, whereas scores 64 and above are considered in the clinical range (Achenbach & Rescorla, 2001). Extant research has shown that researchers have either opted for a conservative approach to classifying co-occurrence by using *T* scores above 63 (Frey & Epkins, 2002), or less conservative, by using *T* score above 60 (Leung & Wong, 1998; Youngstrom et al., 2003). An issue that arose in previous studies, when using a

conservative approach, is that participants whose *T* scores fall between 60 and 63 were not classified and thus were not used in the analyses (e.g., Frey & Epkins, 2002).

Strategy for Categorizing Youth

In the present study, two sources of information, the YSR and TRF, were used to measure adolescents' internalizing and externalizing problems. In accordance with previous studies that have included the CBCL (Child Behavior Checklist), TRF, or YSR, adolescents were considered as externalizing or internalizing if they had *T* scores ≥ 60 on either the TRF or YSR. This approach was used by Frey and Epkins (2002) who used both the CBCL and the YSR in their study of incarcerated youth. The authors identified participants as internalizing based on their YSR *T* score being above 60. Participants were identified as externalizers if they had a *T* score above 60 on at least one of the measures (YSR or TRF) and referred because of an aggressive offense.

In a study of community-based youth, Youngstrom et al. (2003) identified participants as being co-occurring if their *T* score were 60 or higher for both internalizing and externalizing problems on *any one* the measures used (YSR, TRF, CBCL) in the study. The authors also identified participants as externalizing or internalizing if their *T* score was 60 or higher on any one of the CBCL, YSR or TRF externalizing or internalizing scales, respectively. In the above study, Youngstrom et al. (2003) described three strategies that have been typically used to help integrate the information from multiple informants. The strategy used in the current study is that of using any one source of information as sufficient to identify a participant for inclusion in a specific category. This strategy is called the disjunctive approach. According to Youngstrom et al. the disjunctive approach will “generate the broadest and most heterogeneous” (p. 232) group.

The disjunctive approach is also the most widely used strategy, in both the epidemiological and clinical literature, as it is particularly accurate in identifying individuals with the problem of interest (Youngstrom et al., 2003). When multiple informants (e.g., parents and teachers) are used in research or clinical settings to assess a youth's behaviour, the observations of the informants typically occur in different contexts. Therefore, it can be argued that if one informant does not agree with another it may be that the youth's behaviour occurred in a specific context (Kraemer et al., 2003; Youngstrom et al., 2003). The implication being, that because different informants do not agree on the presence of a behaviour does not necessarily indicate that it does not occur, it may be occurring in one context and not another.

Teachers and parents tend to identify externalizing problems at a higher rate than adolescents; conversely adolescents tend to self-report higher levels of internalizing problems (Baruch et al., 1999; Lee et al., 1994). A dilemma arises when a participant who self-reports as internalizing is assessed by the teacher as externalizing. When using multiple informants, there exists the distinct possibility that the assessment of an adolescent's behaviour, as in the above example, will be contradictory. Therefore, in this study, when an adolescent's self-report and their teacher's report indicated contradictory information the adolescent was not categorized in any of the four categories (externalizing, internalizing, co-occurring, no problem). The exclusion of participants because of contradictory information was a strategy employed by Frey and Epkins (2002), in a study examining cognitive distortions along with internalizing and externalizing problems.

Furthermore, the decision not to categorize participants, whose assessments were contradictory, negates having to decide, based solely on report forms, which informant assessment is more valid. This approach may reduce the number of adolescents categorized into the problem categories, but will ensure that neither teacher's nor student's assessment is given greater weight. The decision to not choose between contradictory information would be in keeping with equivocal findings from the study of cross-informants (e.g., Achenbach et al., 1987; De Los Reyes & Kazdin, 2005; Youngstrom et al., 2003). In the current study only three participants were not categorized because of contradictory information.

CHAPTER 4

RESULTS

This chapter will present the results of the current investigations in three sections. The preliminary analyses section presents the results of data screening, missing data, and statistical assumptions. Data screening analyses examined the data for errors in data entry, improbable values, and missing data, followed by univariate and multivariate assumptions of the statistical procedures used in the current study. Note that the results for the assumptions of regression (i.e., linearity, normality, multicollinearity, homoskedasticity) are presented under the relevant research questions in the third section which presented the results of the main analyses. In the second section, analyses of the independent variables (ethnicity, age, and gender) in relation to the dependent variables (internalizing, externalizing, self-debasing, and self-serving cognitive distortions) are presented. Specifically, the second section will present descriptive data for the independent variables in addition to the results of a series of analyses of variance (ANOVAs) examining mean differences across the demographic and independent variables.

The third and final section presents results from the analyses of the research questions that were the primary focus of this study, namely to examine the association of specific and general cognitive distortions to externalizing, internalizing, and co-occurring problems among community-based adolescents (i.e., community sample).

In these analyses, when comparing group means or conducting correlational analyses, effect sizes are included. To provide information about the magnitude of effects, partial eta-squared (η_p^2) were reported for the multivariate test (Wilks' lambda)

for the multivariate analyses of variance (MANOVAs), and Cohen's d (d) as measures of effect size for ANOVAs. According to the criteria proposed by Cohen (1988), an eta-squared effect size of .02 is considered to be a "small effect," .06 is considered to be a "medium effect," and .14 is considered to be a "large effect." With respect to Cohen's d , an effect size of .20 is considered to be a "small effect," .50 is considered to be a "medium effect," and .80 is considered to be a "large effect." For correlational analyses the strength of association are described as either: small ($r = .10$ to $.29$), medium ($r = .30$ to $.49$), or large ($r = .50$ to 1.0), once again, based on Cohen's (1988) guidelines. Cohen's d was calculated using this formula: $d = M_1 - M_2 / SD_{\text{pooled}}$.

Preliminary Analyses

Data Screening

Data were screened using the procedure outlined by Field (2005). Frequencies, histograms, and minimum and maximum scores were used to check for errors in data entry, means and standard deviations were checked for any improbable values, and missing data. Values that fell outside the range of possible values were compared to the original measures in order to see if the anomalous values were the result of data entry error or incomplete measures. If values that fell outside the range of possible values were due to data entry error, these were corrected.

Participants who scored over 4.25 ($n = 35$) on the HIT anomalous responding scale were not included in the analyses as suggested by Barriga et al. (2001). Therefore, 8% of the participants who completed the HIT ($n = 389$) were excluded from the analyses involving the HIT because of suspected anomalous responding. This percentage is slightly higher than the expected 5% exclusion rate (Barriga et al., 2001).

The data were then examined to see whether the assumptions of the parametric tests used in this study were met. The variables of interest examined in this study were: youth and teacher-reported internalizing and externalizing problems, self-serving cognitive distortions (HIT), and self-debasing cognitive distortions (CNCEQ). The descriptive data for each of the variables of interest along with normative data are shown in Table 9. The means and standard deviations were derived from the normative data published for each questionnaire, which were based on samples of non-clinical youth (Achenbach & Rescorla, 2001; Barriga et al., 2001; Leitenberg et al., 1986). The means of the present sample did not appear to be noticeably different than the normative data. A detailed account of the variable's descriptive data across gender and age are presented in Appendices I and J, respectively.

Missing Data

The sample for these analyses consisted of 389 participants; of these participants 387 (99%) completed the YSR, 378 (97%) the CNCEQ, and 389 (100%) the HIT. With respect to missing items, Achenbach and Rescorla (2001) recommend that if more than eight problem items are missing, then the TRF and YSR should not be used for analyses. In the current study, two participants were excluded because they exceeded more than eight items missing on the YSR. Examination of the TRF's indicated that no teacher missed more than eight items. Barriga et al. (2001) indicate that the HIT is invalid if more than 5 items are missed; no participants exceeded more than five missing items in the present study. For the CNCEQ, there is no set amount of missing items that would invalidate the questionnaire; it is left to the judgment of the researcher (H. Leitenberg, personal communication, January 29, 2009). For the present study it was decided that if

Table 9. Means and Standard Deviations of Variables of Interest

	Total	Total	Male		Female		Minimum	Maximum
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
YSR Internalizing <i>T</i> score	53.34	10.43	53.93 (50.0) ^a	10.49 (9.8) ^a	52.82 (50.1) ^a	10.38 (10.1) ^a	27.00	85.00
YSR Externalizing <i>T</i> score	52.80	9.89	54.37 (50.1) ^a	9.73 (9.8) ^a	51.42 (50.2) ^a	9.85 (10.0) ^a	29.00	79.00
TRF Internalizing <i>T</i> score	42.82	6.66	42.36 (50.3) ^a	6.48 (9.2) ^a	43.23 (50.4) ^a	6.8 (9.5) ^a	37.00	66.00
TRF Externalizing <i>T</i> score	45.82	6.59	45.08 (50.9) ^a	7.11 (9.1) ^a	45.84 (50.6) ^a	6.1 (8.9) ^a	42.00	68.00
HIT Total	2.28 (2.39) ^b	0.70 (.69) ^b	2.50 (N/A)	.72 (N/A)	2.11 (N/A)	.62 (N/A)	1.00	4.68
CNCEQ Total	46.07 (57.42) ^c	14.61 N/A	45.74 (57.01) ^c	14.51 N/A	46.20 (57.81) ^c	14.85 (N/A) ^c	24.00	102.00

Notes: YSR = Youth Self-Report; TRF = Teacher's Report Form; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire; N/A= not available. Means and standard deviations in parenthesis are based on normative data.

^aAchenbach and Rescorla (2001); ^bBarriga et al. (2001); ^cLeitenberg et al. (1986)

two or more items were missing then the CNCEQ would be invalid; this is considerably less than eliminating eight items as done in a previous study (Barriga et al., 2000). In the present study no CNCEQs were invalidated because of two or more missing items. All the missing CNCEQs were not completed by the participants. The incomplete CNCEQs may be explained by the fact that the CNCEQ was the last questionnaire in the participant package, and the students may not have had enough time to complete the questionnaire.

The response rate for the TRF was 294 (76%) completed and 95 (24%) missing. The relatively low completion rates for the TRFs may be explained by the fact that all three of the teachers who were absent did not want to continue participating in the study. Furthermore, some of the teachers who did not complete all the TRFs during the class time chose not to participate beyond this allotted time. When examining the completion rates for teachers across schools, only 4 out of the 19 teachers participating completed all of the necessary TRFs for each of their participating students, and absentee teachers, two of which taught grade ten and one taught grade eight, were from three different schools. This information would suggest that missing TRFs were interspersed across all schools and grades.

Because of the amount of missing TRFs, a series of ANOVAs were conducted to examine if any differences existed between the participants who had a corresponding TRF and those who did not. The results of the ANOVAs indicated that the two groups of participants differed significantly on their YSR internalizing, $F(1, 385) = 5.70, p = .02$. Participants with missing TRFs had significantly higher internalizing scores ($M = 55.56, SD = 10.34$) than those with completed TRFs ($M = 52.63, SD = 10.38$), $d = .28$. No

significant differences were identified for YSR externalizing, $F(1, 385) = .41, p = .522$, CNCEQ, $F(1, 376) = .24, p = .622$, or the HIT, $F(1, 352) = .08, p = .78$.

Testing Assumptions

Assessment of the assumption of normality is typically identified using graphs or statistics (Tabachnick & Fidell, 2001). Histograms of the variables of interest were visually inspected for normality. The youth reported internalizing and externalizing, CNCEQ, and HIT score data appeared to be normally distributed. Skewness and kurtosis values, which measure symmetry and “peakedness” respectively, should be zero if the data is normally distributed. If the sample is large (100 or more) it is recommended that the skewness and kurtosis values be inspected to see how far they deviate from zero as opposed to calculating their significance (Field, 2005; Tabachnick & Fidell, 2001). The skewness and kurtosis values of the variable of interest in this study were all found to be close to zero and therefore acceptable. Based on the visual inspection of both the graphs and the skewness and kurtosis values, the data appears to have met the assumption of normality.

Assessment of TRF Normality

The teacher-reported internalizing and externalizing scores were also inspected for normality. The visual inspection of histograms, along with skewness and kurtosis values, which deviated from zero, indicated that the assumption of normality was not met. When the assumption of normality is violated some researchers suggest the transformation of the data (Field, 2005), but not without providing strong caveats. An important issue when deciding whether or not to transform data is the subsequent interpretability of the transformed data (Osborne, 2002). That is, when the data being

transformed is a measure of, for example, psychological constructs, such as those used in the current study, it becomes problematic interpreting the log or square root of internalizing problems. The issue of interpretability after a transformation is discussed by several authors. For example, Tabachnick and Fidell (2001, p. 80) argue that if a scale is “meaningful or widely used” such as the TRF, transformations will make interpretation difficult. Grayson (2004) further supports this argument by concluding that transformation may produce a “different construct” (p. 112), thus hampering interpretation.

From a statistical perspective, the violation of normality makes the hypothesis tests more conservative (i.e., reduces the Type I error rate) and hence reduces the power of the statistical test (Zimmerman & Zumbo, 1993). Mitigating the loss of statistical power is that both MANOVA and regression analyses are robust to violations of normality when large samples, such as those in the current study, are used (Cohen, Cohen, West, & Aiken, 2003; Tabachnick & Fidell, 2001). Based on the preceding information, it was decided that the TRF data would not be transformed.

Univariate and Multivariate Outliers

The data were next examined for univariate and multivariate outliers. Histograms and box plots were used to visually inspect the data for outliers. A few outliers were evident on the youth reported internalizing, CNCEQ, and HIT box graphs, but no extreme scores were indicated by SPSS. The data were then converted into z scores. According to Tabachnick and Fidell (2001), standardized scores exceeding 3.29, $p = .001$, may be potential outliers. The study data were examined in order to see if any of the standardized scores exceeded 3.29. One case was found in the total HIT data and three in the CNCEQ

data. These data points were investigated further by examining the 5% trimmed mean generated by SPSS, this value is generated when SPSS removes the top and bottom 5% of cases. The original means were compared to the trimmed means, and little difference was found, indicating that the extreme scores in the data were not having a strong influence on the data mean (Pallant, 2007). Therefore the outlier cases were retained in the present study because there was no reason to believe that they were not indicative of the intended population.

In order to identify multivariate outliers, Tabachnick and Fidell (2001) recommend using Mahalanobis distance. The procedure for obtaining the Mahalanobis distance involves running a regression analysis in SPSS where the youth reported internalizing, externalizing, CNCEQ, and HIT variables were entered as dependent variables and the ID variable, which identifies the cases in the sample, as the independent variable. The maximum value of the Mahalanobis distance was compared to a critical value based on the number of dependent variables using a chi-square (χ^2) table (Pallant, 2007). The critical value for the current study was 18.47 at $p < .001$. If the Mahalanobis distance value exceeded 18.47, it was considered an outlier. Three multivariate outliers were found. The outlier cases were retained in the present study because there is no reason to believe that they were not indicative of the intended population.

The same procedure, as in the preceding section, was used to identify multivariate outliers from teacher-reported internalizing and externalizing scores. Four multivariate outliers were found. Once again, the outlier cases were retained in the present study because there is no reason to believe that they were not indicative of the intended population.

Univariate Outliers and the TRF

With respect to the teacher-reported internalizing and externalizing scores, a similar procedure outlined in the previous section was used to examine the data for univariate outliers. Both the histogram and box plots showed a large number of outliers for teacher-reported internalizing and externalizing scores. When the data were converted to z scores, nine internalizing scores were above the z score of 3.29, and one outlier was found for the externalizing scores. Upon further inspection of the graphs, these outliers seemed to be valid scores. Both the internalizing and externalizing scores were positively skewed, with the majority (69%) of participants' internalizing scores clustering around the T score of 39, and externalizing scores (77%) predominantly clustering around the T scores of 42 or 43. The graphs also showed that the remaining participants' T scores ranged from 46 to 65 for teacher-reported internalizing, and 49 to 68 for teacher-reported externalizing. Which, according to normative data, are well within the range of scores expected from a non-referred sample, of which 25-30% would be expected to be above the score of 60 (Achenbach & Rescorla, 2001).

Finally, the potential influence of these extreme scores was investigated further by examining the 5% trimmed mean; recall, this value is generated when SPSS removes the top and bottom 5% of cases. The original means were compared to the trimmed means, and little difference was found, indicating that the extreme scores in the data were not having a strong influence on the data mean (Pallant, 2007). Based on the Achenbach and Rescorla (2001) normative data, and the little difference found between original and trimmed means, the outlier cases were retained in the present study because there was no reason to believe that they were not indicative of the intended population.

Descriptive Analyses

Descriptive analyses of means, standard deviations, and frequencies were conducted on self-reported demographic information (gender, age, ethnicity). To examine mean differences across gender, age, and ethnicity, with regard to internalizing and externalizing problems (YSR & TRF), self-serving, and self-debasing cognitive distortions (HIT, CNCEQ), a series of ANOVAs were utilized. For the ANOVA analyses, participants were categorized into two age groups: 12 to 14 and 15 to 17, which correspond, respectively, to the ages of the participants in grades eight and ten. Similar age ranges have been previously used in studies that focused on internalizing and externalizing problems among adolescents and youth (e.g., Achenbach & Rescorla, 2001; Rescorla et al., 2007). The ethnic composition of the current sample was comprised of predominantly European (52%) and Asians (26%) with the other five (Latin American, First Nations, Indo-Canadian, African or Caribbean) ethnicities combined equaling 22%, of which 13% were classified as Others, a category used to include ethnic backgrounds not described by the other categories, for example Arab (e.g., Egyptian) or West Asian (e.g., Turk). From a statistical standpoint, the low number of participants in the First Nations, Indo Canadian, Latin American, African or Caribbean, or Other groups made statistical analyses untenable. In order to analyze the effect of ethnicity, three groups were created, a similar strategy as previously employed by Barriga et al. (2000). The three groups were: Europeans ($n = 170$), Asians ($n = 97$), and the remaining ethnic categories were combined into the final group labeled Other ($n = 87$).

Age, Gender, and Ethnic Differences on YSR/TRF Internalizing and Externalizing

A series of 2 (gender) x 2 (age) x 3(ethnicity) factorial ANOVAs were used to examine differences between the demographic variables (age, gender, ethnicity) and the variables of interest: YSR and TRF internalizing problems, YSR and TRF externalizing problems, HIT (self-serving cognitive distortions), and CNCEQ (self-debasing cognitive distortions). The sample sizes for each of the demographic variables are shown in Table 10. Based on the recommendations of Tabachnick and Fidell (2001) and prior research (e.g., Barriga & Gibbs, 1996; Frey & Epkins, 2002), which used multiple ANOVAs when examining internalizing, externalizing, and cognitive distortions, a Bonferroni adjustment was calculated in order to control for familywise error rate. The most common method of adjustment is to divide the α (alpha) by the number of comparisons (Field, 2005). Six separate ANOVAs were conducted for the following variables: YSR/TRF internalizing and externalizing problems, HIT, and CNCEQ. Therefore a p value of .008 (.05/6) was used to test significance.

Table 10. Sample Sizes of the Demographic Variables

Demographic variables	Sample Size (n)
Gender	
Male	175
Female	202
Age groups	
12 to 14	151
15 to 17	226
Ethnicity	
European	195
Asian	95
Other	87

Analyses of Demographics and YSR Problems

Factorial ANOVAs were conducted to measure the mean differences between the demographic variables (age, gender, ethnicity) and YSR internalizing and externalizing problems. A series of 2 (gender) x 2 (age) x 3 (ethnicity) factorial ANOVAs were used to measure the mean difference between the demographic variables (age, gender, ethnicity) and YSR internalizing and externalizing problems. The results of the analyses indicated no significant gender differences for YSR internalizing, $F(1, 365) = 1.4, p = .233$, or YSR externalizing problems, $F(1, 365) = 6.66, p = .01$. A further set of ANOVAs were used to compare YSR internalizing and externalizing raw score means for gender. The results of the ANOVAs indicated that males and females differed significantly for externalizing raw scores, $F(1, 385) = 7.3, p = .007$, and internalizing raw scores, $F(1, 385) = 8.5, p = .004$. Specifically, males ($M = 12.91, SD = 7.6$) had higher mean externalizing raw scores than females ($M = 10.84, SD = 7.37$), $d = .28$. Conversely, females ($M = 13.79, SD = 8.81$) had higher mean internalizing raw scores than males ($M = 11.31, SD = 7.74$), $d = .30$.

No significant ethnic differences were found for YSR internalizing, $F(2, 365) = 2.15, p = .12$, or YSR externalizing, $F(2, 365) = .835, p = .435$. Finally, early adolescents did not significantly differ from middle adolescents in either YSR internalizing, $F(1, 365) = 2.59, p = .11$, or externalizing, $F(1, 365) = 1.56, p = .213$.

Analyses of Demographics and TRF Problems

Factorial ANOVAs were conducted to measure the mean differences between the demographic variables (age, gender, ethnicity) and TRF internalizing and externalizing problems. A series of 2 (gender) x 2 (age) x 3(ethnicity) factorial ANOVAs were used to

measure the mean difference between the demographic variables (age, gender, ethnicity) and TRF internalizing and externalizing problems.

The results of the factorial ANOVA analyses indicated a significant main effect for age for teacher-reported internalizing problems, $F(1, 275) = 15.35, p = .001$, and a significant main effect for teacher-reported externalizing problems, $F(1, 275) = 6.96, p = .009$. Specifically, early adolescents had significantly higher mean scores on the TRF internalizing scale ($M = 44.83, SD = 8.14$) than the middle adolescents ($M = 41.68, SD = 5.38$), $d = .46$, and early adolescents reported significantly higher mean externalizing scores ($M = 47.16, SD = 7.76$) than middle adolescents, ($M = 45.01, SD = 5.53$), $d = .31$.

Gender differences for TRF internalizing problems were nonsignificant, $F(1, 275) = 1.2, p = .273$, as were those for TRF externalizing problems, $F(1, 275) = .25, p = .620$. With respect to ethnicity, no significant differences were found between the participants categorized as European, Asian, or Other and TRF internalizing, $F(2, 275) = .43, p = .648$, or for TRF externalizing, $F(2, 275) = 2.6, p = .08$.

Age, Gender, and Ethnic Differences on Cognitive Distortions

Age, Gender, and Ethnic Differences on Self-Serving Distortions

As in the previous analyses, a series of 2 (gender) x 2 (age) x 3(ethnicity) factorial ANOVAs were used to measure the mean difference between the demographic variables (age, gender, ethnicity), and self-serving (HIT) cognitive distortions.

The results of the factorial ANOVA showed a significant main effect for gender and self-serving cognitive distortions (HIT), $F(1, 332) = 24.48, p = .001$. An examination of the mean scores indicated that males had higher mean scores on the HIT ($M = 2.5, SD = 0.71$) than did females ($M = 2.11, SD = 0.63$), $d = .58$. This gender

difference, in self-serving cognitive distortions, is consistent with Barriga et al. (2001) findings. With respect to ethnicity, no significant differences were found between participants categorized as European, Asian, or Other, $F(2, 332) = 3.01, p = .05$. Likewise, no significant age differences were found for the HIT scores, $F(1, 332) = 1.10, p = .300$.

Age, Gender, and Ethnic Differences on Self-debasing Distortions

A series of 2 (gender) x 2 (age) x 3(ethnicity) factorial ANOVAs were used to measure the mean difference between the demographic variables (age, gender, ethnicity), and self-debasing (CNCEQ) cognitive distortions. Analyses revealed no significant gender differences in self-debasing cognitive distortions, $F(1, 356) = .01, p = .922$, nor were there any significant ethnic differences, $F(2, 356) = .434, p = .648$. Similar nonsignificant results were found for the age groups, $F(1, 356) = .832, p = .362$.

Main Analyses

Research Questions and Plan of Analyses

The next sections will present the research questions, plan of analyses, followed by the results of the main analyses. The research questions of interest are: What is the association between self-serving cognitive distortions and self-debasing cognitive distortions to externalizing and internalizing problems, respectively? What is the relationship between cognitive distortions, age, and gender in the prediction of externalizing and internalizing problems? Are there significant differences among adolescents categorized as internalizing, externalizing, co-occurring, or no problem with respect to their self-reported specific self-serving, or self-debasing cognitive distortions? Finally, which of the different specific self-serving or self-debasing cognitive distortions

is better able to predict self-reported externalizing, internalizing problems, respectively? Whether the results support or do not support the study hypotheses will be noted in the analyses of the relevant research questions.

For the research question examining differences in participants' cognitive distortions between and within problem categories, it was necessary to categorize participants as internalizing, externalizing, co-occurring, or no problem. The participants were categorized into these problem categories following Achenbach and Rescorla's (2001) guidelines and previous research (e.g., Frey & Epkins, 2002).

The four research questions were analyzed in order. The results of the analyses involving self-reported internalizing and externalizing will be presented first, followed by those involving teacher-reported problems. The plan of analyses began with the examination, in research questions one and two, respectively, of the general self-debasing and self-serving cognitive distortions and their association and relative importance to the prediction of teacher and self-reported internalizing and externalizing problems. These analyses were followed, in research question three, with the examination of the between and within group differences of adolescents categorized as internalizing, externalizing, co-occurring, or no problem, and specific self-debasing and self-serving cognitive distortions. Finally, in research question four, the relative importance of the specific self-debasing and self-serving cognitive distortions in predicting teacher and self-reported internalizing and externalizing problems were presented.

Association of Cognitive Distortions to Internalizing and Externalizing Problems

This section presents the results of the correlational analyses testing whether general self-debasing cognitive distortions are more highly associated with internalizing

problems than general self-serving cognitive distortions, and whether general self-serving cognitive distortions are more highly associated with externalizing problems than general self-debasing cognitive distortions.

The YSR or TRF, HIT, and the CNCEQ were used to measure internalizing, externalizing, self-serving, and self-debasing cognitive distortions, respectively. The results of the self-reported internalizing and externalizing analyses are presented first, followed by the teacher-reported internalizing, externalizing analyses. In these analyses, Pearson's correlations were used to measure the strength of the association between the variables of interest.

The correlation analyses were first conducted for the entire sample. Then, separate correlations were conducted to measure the association between gender, age, and internalizing and externalizing because of the robust empirical association between these four variables (e.g., Achenbach & Rescorla, 2001). Although not as robust as for internalizing and externalizing, the literature has indicated some support for gender and age differences (Barriga et al., 2001; Leitenberg et al., 1986), and their association (Epkins 1996; Liao et al., 1998) to self-serving and debasing cognitive distortions.

Preliminary correlations indicated that YSR internalizing was not significantly correlated with TRF internalizing, $r = .002$, $n = 292$, $p = .92$, and YSR externalizing was significantly associated with TRF externalizing, $r = .26$, $n = 292$, $p = .001$.

Prior to conducting the correlational analyses, scatterplots were generated using SPSS. The scatterplots provided a preliminary indication of the direction of the correlations between the variables of interest, in addition to showing any outliers that may affect the correlation coefficient (Field, 2005). There were no obvious outliers in

either scatterplots as the data points were fairly close to other points on the graph. The cluster of points was fairly even from one end to another suggesting that the data were homoscedastic.

Association of Cognitive Distortions to Youth Reported Problems

The results of the correlation analyses, using the YSR as a measure of internalizing and externalizing, for the total sample are presented in Table 11, which shows that the correlations were all statistically significant and positive. In order to establish whether the correlation coefficients for the analyses were significantly different, Fisher's *r*-to-*z* test (FRZ) transformation was used to convert the *r* values into *z* scores (Pallant, 2007).

As shown in Table 11, self-debasing cognitive distortions were highly and significantly correlated to youth self-reported internalizing problems, $r = .56$, $n = 376$, FRZ $p = .05$, and self-serving cognitive distortions were highly and significantly correlated to youth self-reported externalizing problems, $r = .65$, $n = 352$, FRZ $p = .05$.

Table 11. Intercorrelations Among Self-Reported Internalizing and Externalizing Problems, and Cognitive Distortions for the Entire Sample

	1	2	3	4	<i>M</i>	<i>SD</i>	<i>n</i>
1. YSR Internalizing <i>T</i> score	-	.48*	.56*	.38*	53.34	10.43	387
2. YSR Externalizing <i>T</i> score		-	.35*	.65*	52.80	9.90	387
3. CNCEQ Total			-	.42*	45.99	14.68	378
4. HIT Total				-	2.29	.70	354

Notes: YSR = Youth Self-Report; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

* $p < .01$.

The results of the analyses indicated that self-debasing cognitive distortions had a larger and significant correlation to youth self-reported internalizing problems, when compared to self-serving cognitive distortions, and self-serving cognitive distortions had a larger and significant correlation to youth self-reported externalizing problems, when compared to self-serving cognitive distortions.

These results indicate that self-debasing cognitive distortions are more highly correlated with internalizing problems than self-serving cognitive distortions, and that self-serving cognitive distortions are more highly correlated with externalizing problems than self-debasing cognitive distortions. These results support the study hypothesis that self-debasing cognitive distortions are more highly associated with internalizing problems than self-serving cognitive distortions, and that self-serving cognitive distortions are more highly associated with externalizing problems than self-debasing cognitive distortions. Further analyses were conducted to determine whether these associations were present when gender and age were examined.

Within gender association. The results of the correlational analysis between self-serving, self-debasing distortions, internalizing, externalizing and gender were significant for both males and females as indicated in Table 12. With respect to gender and the association between self-serving cognitive distortions and externalizing, and self-debasing cognitive distortions and internalizing, males' self-debasing cognitive distortions, $r = .54$, $n = 174$, FRZ $p = .02$, were more highly and significantly associated with internalizing problems than self-serving cognitive distortions $r = .32$, $n = 166$, FRZ $p = .02$. Conversely, males' self-serving cognitive distortions, $r = .66$, $n = 166$, FRZ $p = .001$, were more highly and significantly associated with externalizing problems than

Table 12. Intercorrelations Among Self-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Gender

	1	2	3	4	<i>M</i>	<i>SD</i>
Males (<i>n</i> = 167)						
1. YSR Internalizing <i>T</i> score	-	.33*	.54*	.33*	53.93	10.49
2. YSR Externalizing <i>T</i> score		-	.30*	.66*	54.37	9.73
3. CNCEQ Total			-	.42*	45.74	14.50
4. HIT Total				-	2.49	.72
Females (<i>n</i> = 206)						
1. YSR Internalizing <i>T</i> score	-	.60*	.59*	.45*	52.82	10.39
2. YSR Externalizing <i>T</i> score		-	.40*	.64*	51.43	9.84
3. CNCEQ Total			-	.48*	46.20	14.85
4. HIT Total				-	2.11	.62

Notes: YSR = Youth Self-Report; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

* $p < .01$.

self-debasing cognitive distortions, $r = .30$, $n = 174$, $p = .001$. The results for females also indicated that self-serving cognitive distortions, $r = .64$, $n = 186$, $FRZ\ p = .001$, were more highly and significantly associated with externalizing problems than self-debasing cognitive distortions, $r = .40$, $n = 202$, $FRZ\ p = .001$.

These results indicate medium to large significant associations between cognitive distortions and internalizing, externalizing problems among males and females. These results support the study hypothesis of the association between cognitive distortions and internalizing, externalizing problems among males and females. The exception being females' self-serving and self-debasing cognitive distortions and internalizing problems. The results showed that there was no significant difference between the association of

self-debasing, $r = .59$, $n = 202$, FRZ $p = .06$, and self-serving cognitive distortions, $r = .45$, $n = 186$, FRZ $p = .06$, to internalizing problems.

Within Age Group Associations

When examining the results of the correlations between the variables of interest and age (see Table 13), middle adolescents' self-serving cognitive distortions, $r = .66$, $n = 209$, FRZ $p = .001$, were more highly and significantly associated with externalizing problems than self-debasing cognitive distortions, $r = .32$, $n = 222$, FRZ $p = .001$. Furthermore, self-debasing cognitive distortions, $r = .64$, $n = 222$, FRZ $p = .001$, were found to be more highly and significantly associated with internalizing problems than self-serving cognitive distortions, $r = .40$, $n = 209$, FRZ $p = .001$.

Table 13. Intercorrelations Among Self-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Age Group

	1	2	3	4	<i>M</i>	<i>SD</i>
Early Adolescence ($n = 155$)						
1. YSR Internalizing <i>T</i> score	-	.52*	.47*	.36*	52.41	9.92
2. YSR Externalizing <i>T</i> score		-	.42*	.64*	51.77	9.77
3. CNCEQ Total			-	.43*	47.08	15.20
4. HIT Total				-	2.26	.69
Middle Adolescence ($n = 232$)						
1. YSR Internalizing <i>T</i> score	-	.45*	.64*	.40*	53.97	10.74
2. YSR Externalizing <i>T</i> score		-	.32*	.66*	53.49	9.93
3. CNCEQ Total			-	.42*	45.22	14.28
4. HIT Total				-	2.31	.70

Notes. YSR = Youth Self-Report; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

* $p < .01$.

Early adolescents' self-serving cognitive distortions, $r = .64$, $n = 143$, FRZ $p = .008$, also indicated a larger and significant association with externalizing problems than with self-debasing cognitive distortions, $r = .42$, $n = 154$, FRZ $p = .008$. These results indicate medium to large associations between cognitive distortions and internalizing, externalizing problems in early and middle adolescents. These results support the study hypothesis of the association between cognitive distortions and internalizing, externalizing problems in early and middle adolescents, with one exception. Among early adolescents, no significant difference was found between the association of self-debasing, $r = .47$, $n = 154$, FRZ $p = .14$, and self-serving cognitive distortions, $r = .37$, $n = 143$, FRZ $p = .50$, to internalizing problems.

In sum, the results of the correlation analyses, using the total sample, indicate that self-debasing cognitive distortions are more highly associated with internalizing problems than self-serving cognitive distortions, and that self-serving cognitive distortions are more highly associated with externalizing problems than self-debasing cognitive distortions. The results support the hypothesized association between self-debasing cognitive distortions and internalizing problems, and the association between self-serving cognitive distortions to externalizing problems. The support for the hypothesis was also indicated in the correlations utilizing age and gender as factors, with two notable exceptions.

The hypothesized specificity between self-debasing cognitive distortions and internalizing was not found in either the early adolescents or females. The results of the analyses showed that that there was no significant difference between the association of self-debasing and self-serving cognitive distortions to internalizing problems for either

early adolescents or females. The next section will present the results of the teacher-reported internalizing and externalizing problems.

Association of Cognitive Distortions to Teacher-Reported Internalizing and Externalizing

The results of the correlation analyses, using the TRF as a measure of internalizing and externalizing, for the total sample are presented in Table 14, which shows that the majority of correlations were not statistically significant. As shown in Table 14, self-debasing cognitive distortions were not significantly correlated to teacher-reported internalizing problems, $r = .04$, $n = 286$, $p = .53$, and self-serving cognitive distortions were not significantly correlated to teacher-reported externalizing problems, $r = .09$, $n = 269$, $p = .13$. These results indicate that self-debasing cognitive distortions are not more highly associated with teacher-reported internalizing problems than self-serving cognitive distortions, and that self-serving cognitive distortions are not more highly associated with teacher-reported externalizing problems than self-debasing cognitive distortions. These results do not support the study hypotheses that self-debasing cognitive distortions are

Table 14. Intercorrelations Among Teacher-Reported Internalizing and Externalizing Problems, and Cognitive Distortions for Entire Sample

	1	2	3	4	<i>M</i>	<i>SD</i>	<i>n</i>
1. TRF Internalizing <i>T</i> score	-	.52*	.04	-.09	42.82	6.65	294
2. TRF Externalizing <i>T</i> score		-	.06	.09	45.82	6.72	294
3. CNCEQ Total			-	.42*	45.99	14.68	378
4. HIT Total				-	2.29	.70	354

Notes. TRF = Teacher's Report From; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

* $p < .01$.

more highly associated with teacher-reported internalizing problems than self-serving cognitive distortions, and that self-serving cognitive distortions are more highly associated with teacher-reported externalizing problems than self-debasing cognitive distortions.

Further analyses were conducted to determine whether any associations were present when gender and age were examined. The results of the correlation analyses between self-serving, self-debasing distortions, teacher-reported internalizing, externalizing and gender were nonsignificant for both males and females as indicated in Table 15. Specifically, no significant associations were found for males or females between self-serving or self-debasing distortions and externalizing and internalizing

Table 15. Intercorrelations Among Teacher-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Gender

	1	2	3	4	<i>M</i>	<i>SD</i>	<i>n</i>
Males							
1. TRF Internalizing <i>T</i> score	-	.57**	.03	.02	42.36	6.48	139
2. TRF Externalizing <i>T</i> score		-	.05	.17	45.77	7.10	139
3. CNCEQ Total			-	.42**	45.74	14.50	175
4. HIT Total				-	2.49	.72	167
Females							
1. TRF Internalizing <i>T</i> score	-	.47**	.04	-.17*	43.23	6.80	155
2. TRF Externalizing <i>T</i> score		-	.08	.04	46.08	6.40	155
3. CNCEQ Total			-	.48**	46.20	14.85	203
4. HIT Total				-	2.11	.62	187

Notes. TRF = Teacher's Report Form; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

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

problems, respectively. As such, these results do not indicate a significant association between cognitive distortions and internalizing, externalizing problems among males and females. These results do not support the study hypothesis of the association between cognitive distortions and internalizing, externalizing problems among males and females.

When examining the results of the correlations between the variables of interest and age (see Table 16), middle adolescents' self-serving cognitive distortions were not significantly associated with externalizing problems, nor were middle adolescents' self-debasing cognitive distortions significantly associated with internalizing problems. Similarly, early adolescents' self-debasing cognitive distortions were also nonsignificantly associated with internalizing problems. The one exception to the pattern of nonsignificant associations, between cognitive distortions and internalizing and

Table 16. Intercorrelations Among Teacher-Reported Internalizing and Externalizing Problems, and Cognitive Distortions by Age Group

	1	2	3	4	<i>M</i>	<i>SD</i>	<i>n</i>
Early Adolescence							
1. TRF Internalizing <i>T</i> score	-	.55**	.08	-.01	44.74	8.07	110
2. TRF Externalizing <i>T</i> score		-	.07	.23*	47.35	7.96	110
3. CNCEQ Total			-	.43**	47.08	15.20	156
4. HIT Total				-	2.26	.69	145
Middle Adolescence							
1. TRF Internalizing <i>T</i> score	-	.44**	-.02	-.15	41.67	5.35	184
2. TRF Externalizing <i>T</i> score		-	.05	.01	45.09	5.71	184
3. CNCEQ Total			-	.42**	45.22	14.28	222
4. HIT Total				-	2.31	.70	209

Notes: TRF = Teacher's Report Form; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

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

externalizing problems, were found for early adolescents' self-serving cognitive distortions. The results indicated that their self-serving cognitive distortions were significantly associated with teacher-reported externalizing problems.

In sum, the results of the correlation analyses, using the total sample, indicated that self-debasing cognitive distortions were not more highly associated with teacher-reported internalizing problems than self-serving cognitive distortions, and that self-serving cognitive distortions were not more highly associated with teacher-reported externalizing problems than self-debasing cognitive distortions. The lack of support for a significant association between cognitive distortions and internalizing and externalizing problems was also indicated in the correlations utilizing age and gender as factors, with one exception. A significant association between self-serving cognitive distortions and teacher-reported externalizing was found only in early adolescents. The results of these analyses, using the total sample, did not support the hypothesis that self-debasing cognitive distortions are more highly associated with teacher-reported internalizing problems than self-serving cognitive distortions, and that self-serving cognitive distortions are more highly associated with teacher-reported externalizing problems than self-debasing cognitive distortions. The hypothesis was also not supported when conducting correlations utilizing age and gender as factors, with one exception. Early adolescents' self-serving cognitive distortions and externalizing was found to be significantly associated, supporting the study hypothesis.

These results contrast with those found for self-reported internalizing and externalizing problems. Specifically, both self-debasing and self-serving cognitive distortion were found to be significantly associated, respectively, with self-reported

externalizing and internalizing, for the total sample, and early, middle adolescent males and females. Whereas, the only significant association, in the analyses of teacher-reported problems, was found for teacher-reported externalizing and self-serving cognitive distortions.

Cognitive Distortions, Age, and Gender in the Prediction of Externalizing and Internalizing

The next section will address the research question of whether there is a relationship between cognitive distortions, age, and gender in the prediction of externalizing and internalizing problems. For this research question, a series of hierarchical regression analyses were conducted to ascertain the degree to which self-serving cognitive distortions, as measured by the HIT questionnaire, predict externalizing behaviour and to what degree self-debasing cognitive distortions, as measured by the CNCEQ questionnaire, predict internalizing behaviour. Gender and age are associated with both externalizing and internalizing problems (Achenbach & Rescorla, 2001; Costello et al., 2003) thus, controlling for these potentially confounding variables provided a stronger test of whether cognitive distortions predict internalizing or externalizing problems.

Relative Pratt Index

For the regression analyses in the current study, a novel statistical approach in this area of the literature was used to measure the relative importance of the predictor variables in the linear regression models. The relative Pratt index (RPI) was developed by Thomas et al. (1998) as a means of ordering the predictors in the final model. This approach partitions the R^2 for each predictor variable, producing values that are easily

converted into the percentage of the variance explained by each predictor variable. The RPI is calculated as follows: $d_j = \beta_j r / R^2$, where d_j is the RPI, β_j is the Beta coefficient, and r is the zero-order correlation coefficient.

The RPI was used in the current study because it is both additive and intuitively simple to interpret (Ochieng & Zumbo, 2001). In order to determine the relative importance of the predictor variables, an operating principle was used: $d_j > 1/2p$, where d_j is the RPI, and p is the number of predictor variables in the regression model. Therefore, if the RPI is greater than the operating principle value, the predictor is relatively important, and the higher the RPI value the more relatively important the predictor is as compared to the other predictor variables. The following sections present the results of the hierarchical regression analyses for self-serving and self-debasing cognitive distortions and self-reported problems. These are followed by the results of the regression analyses using teacher-reported problems.

Self-serving Cognitive Distortions and Self-reported Externalizing

The first step in the hierarchical regression analysis was to enter gender, age, and internalizing as control variables. Internalizing was controlled, because the research shows that internalizing and externalizing tend to co-occur (Angold et al., 1999; McConaughy & Achenbach, 1994; Reitz et al., 2005) and preliminary results from the present study indicated a high correlation between internalizing and externalizing.

In the second step of the hierarchical regression analysis, the HIT questionnaire and CNCEQ questionnaire were entered. The first model accounted for 25% of the variance in externalizing problems. In step 2, with the inclusion of the HIT questionnaire and CNCEQ questionnaire into the first model, 49% of the variance in externalizing

problems, $F(5, 340) = 65.94, p = .001$, was explained by the second model. The difference in explained variance, between the first and second model, was a significant 24%, $\Delta R^2 = .244, F \text{ change}(2, 340) = 81.80, p = .001$.

In step 2, internalizing and the HIT questionnaire had statistically significant β values and the CNCEQ questionnaire was nonsignificant. These results suggest that self-serving cognitive distortions (HIT), when gender, age and internalizing problems are held constant, are significant predictors of externalizing behaviour, $\beta = .57, p = .001$, and self-debasing cognitive distortions (CNCEQ) were not significant predictors, $\beta = -.054, p = .28$, of externalizing problems (see Table 17). These results support the hypothesis that self-serving cognitive distortions (HIT) are significant predictors of externalizing problems.

Table 17. Summary of Hierarchical Regression Analysis for the HIT Questionnaire
Predicting Self-Reported Externalizing Problems ($N = 387$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Age	.579	.463	.059
Gender	-2.410	.930	-.122*
Internalizing	.442	.045	.466**
Step 2			
Age	.319	.384	.033
Gender	.523	.806	.026
Internalizing	.274	.046	.289**
HIT	8.12	.651	.570**
CNCEQ	-.036	.033	-.054

Notes: HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire. Sex was coded as 1 = male and 2 = female.

* $p < .05$. ** $p < .001$.

In order to gain a more accurate indication of variable importance, a final model was created by removing all nonsignificant variables found in step 2 of the regression analysis and the RPI calculated for the remaining variables (Thomas et al., 1998). The final model explained 49% of the total variance. Based on the operating principle value of .25, the RPI of the self-serving cognitive distortions (HIT) indicated that they were the most important relative predictors, relative to the other variables in the model, of externalizing problems, followed by internalizing (see Table 18).

Table 18. Final Model Hierarchical Regression Analysis for the HIT Questionnaire
Predicting Self-Reported Externalizing Problems ($N = 387$)

Variable	B	$SE\ B$	β	Relative Pratt Index
Final Model				
Internalizing	.254	.039	.268*	.26
HIT	7.844	.589	.551*	.74

Note: Relative Pratt index $> .25$ is considered an important predictor in the model. YSR = Youth Self-Report; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

* $p < .001$.

Self-debasing Cognitive Distortions and Self-reported Internalizing

The first step in the hierarchical regression analysis was to enter gender, age, and externalizing as control variables. Externalizing was controlled because the research shows that internalizing and externalizing tend to co-occur (Angold et al., 1999; McConaughy & Achenbach, 1994; Reitz et al., 2005) and preliminary results from the present study indicated a high correlation between the internalizing and externalizing.

In the second step of the hierarchical regression analysis, the HIT questionnaire and CNCEQ questionnaire were entered. The first model accounted for 23% of the variance in internalizing problems. In step 2, with the inclusion of the HIT questionnaire and CNCEQ questionnaire into the first model, 42% of the variance, $F(5, 340) = 48.14$, $p = .001$, in internalizing problems was explained by the second model. The difference in explained variance, between the first and second model, was a significant 18%, $\Delta R^2 = .18$, $F \text{ change}(2, 340) = 52.83$, $p = .001$.

In step 2, externalizing and the CNCEQ questionnaire had statistically significant β values and the HIT questionnaire was nonsignificant. This result suggests that self-debasing cognitive distortions (CNCEQ), when controlling for gender, age, and externalizing problems, are a significant predictor of internalizing behaviour, $\beta = .47$, $p = .001$, and self-serving cognitive distortions (HIT) are not a significant predictor, $\beta = -.05$, $p = .44$, of internalizing problems (see Table 19). This result supports the hypothesis that self-debasing cognitive distortions (CNCEQ) are a significant predictor of internalizing problems.

In order to gain a more accurate indication of variable importance, a final model was created by removing all the nonsignificant variables found in step 2 of the regression analysis and the RPI calculated for the remaining variables (Thomas et al., 1998). The final model explained 41% of the total variance. Based on the operating principle value of .25, the RPI of the self-debasing cognitive distortions (CNCEQ) indicated that they were the most important predictors, relative to the other variables in the model, of internalizing problems, followed by externalizing problems (see Table 20).

Table 19. Summary of Hierarchical Regression Analysis for the CNCEQ Questionnaire
Predicting Self-Reported Internalizing Problems ($N = 387$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Age	.553	.494	.053
Gender	.388	1.001	.019
Externalizing	.502	.051	.476**
Step 2			
Age	.807	.433	.078
Gender	-.455	.913	-.022
Externalizing	.352	.058	.333**
HIT	-.693	.890	-.046
CNCEQ	.332	.033	.467**

Notes: YSR = Youth Self-Report; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire. Sex was coded as 1 = male and 2 = female.

** $p < .001$.

Table 20. Final Model Summary of Hierarchical Regression Analysis for the CNCEQ
Questionnaire Predicting Self-Reported Internalizing Problems ($N = 387$)

Variable	<i>B</i>	<i>SE B</i>	β	Relative Pratt Index
Final Model				
Externalizing	.339	.045	.321	.38
CNCEQ	.320	.030	.451	.62

Notes: Relative Pratt index $> .25$ is considered an important predictor in the model.

YSR = Youth Self-Report; HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire.

* $p < .001$.

Regression analyses using TRF reports. The following sections address the research question of whether there is a relationship between self-debasing and self-serving cognitive distortions, age, and gender in the prediction of teacher-reported externalizing and internalizing problems. For the analyses, using teacher-reported internalizing and externalizing problems as dependent variables, statistical and graphical data indicated that there were no violations of the assumptions of linearity, multicollinearity, or homoskedasticity. A few outliers were found, but Cook's distance values were below 1, indicating no undue influence on the models from these data points. Based on the scatterplot and normal probability plot, the assumption of normality seemed to have been violated. The following sections present the results of the hierarchical regression analyses for specific self-serving, self-debasing cognitive distortions and teacher, self-reported internalizing and externalizing problems.

Self-serving cognitive distortions and teacher-reported externalizing. In order to examine whether there was a relationship between self-serving cognitive distortions, age, and gender in the prediction of teacher-reported externalizing and internalizing problems, hierarchical regression was utilized. The first step in the hierarchical regression analysis was to enter gender, age, and internalizing as control variables. Internalizing was controlled, because the research shows that internalizing and externalizing tend to co-occur (Angold et al., 1999; McConaughy & Achenbach, 1994; Reitz et al., 2005) and preliminary results from the present study indicated a high correlation between internalizing and externalizing.

In the second step of the hierarchical regression analysis, the HIT questionnaire and CNCEQ questionnaire were entered. The first model accounted for 30% of the

variance in externalizing problems. In step 2, with the inclusion of the HIT questionnaire and CNCEQ questionnaire into the first model, 31% of the variance in externalizing problems was explained by the second model, $F(5, 263) = 23.82, p = .001$. The difference in explained variance, between the first and second model, was a nonsignificant 1.6%, $\Delta R^2 = .016, F \text{ change}(2, 263) = 3.13, p = .08$.

In step 2, internalizing and the HIT questionnaire had statistically significant β values, and the CNCEQ questionnaire was a nonsignificant predictor. These results indicate that self-serving cognitive distortions (HIT), when gender, age and internalizing problems are held constant, are significant predictors of externalizing behaviour, and self-debasing cognitive distortions (CNCEQ) were not significant predictors of externalizing problems (see Table 21). These results support the hypothesis that self-serving cognitive distortions (HIT) are significant predictors of externalizing problems.

Table 21. Summary of Hierarchical Regression Analysis for the HIT Questionnaire
Predicting Teacher-Reported Externalizing Problems ($N = 294$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Age	-.271	.341	-.042
Gender	-.401	.678	-.031
Internalizing	.527	.052	.536**
Step 2			
Age	-.338	.339	-.052
Gender	.138	.707	.011
Internalizing	.538	.051	.546**
HIT	1.409	.565	.149*
CNCEQ	-.024	.026	-.054

Notes: HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire. Sex was coded as 1 = male and 2 = female.

* $p < .05$. ** $p < .001$.

In order to gain a more accurate indication of variable importance, a final model was created by removing all the nonsignificant variables found in step 2 of the regression analysis and the RPI calculated for the remaining variables (Thomas et al., 1998). The final model explained 31% of the total variance. Based on the operating principle value of .25, the RPI of the internalizing problems indicated that they were the more important predictors of externalizing problems. Whereas, self-serving cognitive distortions were found to be unimportant predictors (see Table 22).

Table 22. Final Model Hierarchical Regression Analysis for the HIT Questionnaire
Predicting Teacher-Reported Externalizing Problems ($N = 294$)

Variable	B	$SE\ B$	β	Relative Pratt Index
Final Model				
Internalizing	.543	.050	.552**	.97
HIT	1.128	.483	.120*	.03

Notes: Relative Pratt index $> .25$ is considered an important predictor in the model.

HIT = How I Think.

* $p < .05$. ** $p < .001$.

Self-debasing cognitive distortions and teacher-reported internalizing. In order to examine whether there was a relationship between self-debasing cognitive distortions, age, and gender in the prediction of teacher-reported externalizing and internalizing problems, hierarchical regression was utilized. The first step in the hierarchical regression analysis was to enter gender, age, and externalizing as control variables. Externalizing was controlled, because the research shows that internalizing and externalizing tend to co-occur (Angold et al., 1999; McConaughy & Achenbach, 1994; Reitz et al., 2005) and

preliminary results from the present study indicated a high correlation between the internalizing and externalizing.

In the second step of the hierarchical regression analysis, the HIT questionnaire and CNCEQ questionnaire were entered. The first model accounted for 31% of the variance in internalizing problems. In Step 2, with the inclusion of the HIT questionnaire and CNCEQ questionnaire into the first model, 32% of the variance in internalizing problems was explained by the second model, $F(5, 263) = 25.17, p = .001$. The difference in explained variance, between the first and second model, was a significant, 1.6%, $\Delta R^2 = .016, F \text{ change}(2, 263) = 2.78, p = .04$.

In step 2, externalizing and the HIT questionnaire had statistically significant β values and the CNCEQ questionnaire was nonsignificant. This result indicates that self-debasing cognitive distortions (CNCEQ), when controlling for gender, age, and externalizing problems, are not a significant predictor of teacher-reported internalizing behaviour. The fact that self-serving cognitive distortions (HIT) were found to be significant predictors of internalizing problems is contrary to what would be expected given the findings in the extant literature (see Table 23). This result did not support the hypothesis that self-debasing cognitive distortions (CNCEQ) would be a significant predictor of internalizing behaviour. The fact that self-serving cognitive distortions (HIT) were found to be significant predictors of internalizing problems also did not support the study hypothesis.

In order to gain a more accurate indication of variable importance, a final model was created by removing all the nonsignificant variables found in step 2 of the regression analysis and the RPI calculated for the remaining variables (Thomas et al., 1998). The

Table 23. Summary of Hierarchical Regression Analysis for the CNCEQ Questionnaire Predicting Teacher-Reported Internalizing Problems ($N = 294$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Age	-.685	.341	-.104*
Gender	.789	.682	.059
Externalizing	.535	.052	.527**
Step 2			
Age	-.593	.340	-.090
Gender	.230	.712	.017
Externalizing	.545	.052	.537**
HIT	-1.423	.569	-.149*
CNCEQ	.037	.026	.082

Notes: HIT = How I Think; CNCEQ = Children's Negative Cognitive Error Questionnaire. Sex was coded as 1 = male and 2 = female.

* $p < .05$. ** $p < .001$.

final model explained 31% of the total variance. Based on the operating principle value of .25, the RPI indicated that externalizing problems were the most important predictors, relative to the other variables in the model, of internalizing problems, and that self-serving cognitive distortions were unimportant relative predictors (see Table 24).

Table 24. Final Model Summary of Hierarchical Regression Analysis for the CNCEQ Questionnaire Predicting Teacher-Reported Internalizing Problems ($N = 294$)

Variable	<i>B</i>	<i>SE B</i>	β	Relative Pratt Index
Final Model				
Externalizing	.559	.052	.550**	.96
HIT	-1.219	.490	-.127*	.04

Notes: Relative Pratt index $> .25$ is considered an important predictor in the model.

HIT = How I Think.

* $p < .05$. ** $p < .001$.

Differences in Cognitive Distortions Within and Between Problem Categories

This section will first present the strategy used to categorize participants into specific problem categories, and then present the results of the analyses for the research question pertaining to whether there are significant differences among adolescents categorized as internalizing, externalizing, co-occurring, or no problem categories with respect to their self-reported specific self-serving, or self-debasing cognitive distortions.

Participant categorization. In order to analyze between and within group differences, for specific self-serving and debasing cognitive distortions, it was necessary to categorize participants into four problem categories. An approach to categorizing youth, cited in the literature, is to divide the youth into externalizing, internalizing, co-occurring, no problem or control groups (e.g., Frey & Epkins, 2002; Garnefski et al., 2005; Leung & Wong, 1998; Youngstrom et al., 2003). These groups were based on either cut-off scores, for example externalizing only participants had externalizing *T* scores 60 above and internalizing scores 60 or below (Youngstrom et al., 2003), or the use of percentiles, where scoring above the 80th percentile on the externalizing scale and below the 60th percentile on internalizing classifies the participant as externalizing only (Garnefski et al., 2005; Leung & Wong, 1998).

A decision has to be made between conservative cutoff scores and obtaining sample sizes large enough to conduct statistical analyses (Leung & Wong, 1998), which was a strong probability in the current study. Participants in the current study were community-based, as such, they tend to exhibit mean levels of externalizing and internalizing *T* scores well below the border line clinical range, when compared to referred adolescents (Achenbach & Rescorla, 2001), accordingly using community-based

participants would theoretically restrict the range of individuals above the clinical cut point, substantially reducing sample size. Therefore, in the current study, the less conservative approach was adopted, in keeping with previous research (Leung & Wong, 1998; Youngstrom et al., 2003), and in order to increase the statistical power of the analyses by ensuring adequate sample sizes (Field, 2005).

Based on the above reasons T scores ≥ 60 on the internalizing and externalizing scales of the YSR or TRF were used to indicate externalizing or internalizing, respectively. These criteria were chosen based on prior studies by Frey and Epkins (2002), Youngstrom et al. (2003), and on Achenbach and Rescorla (2001) recommendations that T scores between 60 and 63 were the most accurate in differentiating clinical and non-clinical participants. The categories of externalizing, internalizing, co-occurring, or no problem were used in current analyses. It should be noted that the no problem category indicates that participants scored below the T score of 60, it does not indicate an absence of internalizing or externalizing problems. The categorization criteria are described in Appendix K.

The participants included in the analyses were categorized as 17% internalizing ($n = 65$), 13% externalizing ($n = 50$), 15% co-occurring ($n = 59$), and 55% no problem ($n = 212$), the mean age and sample sizes of each problem category are presented in Table 25. The results from an ANOVA indicated that there were no significant age differences among the problem categories for males, $F(3, 177) = .857, p = .46$, or females, $F(3, 201) = 1.41, p = .24$. When comparing the current participants to Achenbach and Rescorla's (2001) normative data, the percentage of participants, in the current study, categorized in each problem category was substantially less than the 25%

Table 25. Mean Age, Standard Deviations, and Sample Size of the Problem Categories

Problem Categories	Males			Females		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Externalizing	14.20	1.08	29	14.33	.85	21
Internalizing	14.50	.94	36	14.31	1.14	29
Co-occurring	14.45	.99	31	14.57	.88	28
No problem	14.24	1.04	85	14.16	1.01	127

to 30% of Achenbach and Rescorla's nonreferred sample who were in the combined borderline and clinical ranges for internalizing, externalizing or both.

The purpose of the next section is to report the results of MANOVA analyses examining whether there are significant mean differences between adolescents classified as either internalizing, externalizing, co-occurring, or no problem for self-reported specific self-serving cognitive distortions (self-centered, blaming others, minimizing/mislabeling, assuming the worst) or specific self-debasing (catastrophizing, personalizing, overgeneralizing, selective abstraction) cognitive distortions. For brevity, the classifications of internalizing, externalizing, co-occurring, or no problem were referred to, collectively, as problem categories.

In addition to analyzing between problem categories differences for specific self-serving and debasing cognitive distortions, repeated measures ANOVA were used to examine within problem categories differences for the specific cognitive distortions. Following the recommendations of Tabachnick and Fidell (2001), when a significant main effect or interaction was found with the MANOVA, univariate analyses were conducted as a follow-up.

Multivariate significance was determined using Wilks' lambda as suggested by Tabachnick and Fidell (2001). Three participants were not included in the analyses because of contradictory information from the YSR and TRF. The first MANOVA was used to analyze the mean differences between adolescents' problem categories on self-serving cognitive distortions. Both gender and age were included in the analyses. The multivariate tests from the MANOVA indicated a significant interaction between age and problem categories, $F(12, 878) = 1.89, p = .03, \eta_p^2 = .02$. Two main effects were found for the problem category, $F(12, 878) = 10.02, p = .001, \eta_p^2 = .11$, and for gender, $F(4, 332) = 6.89, p = .001, \eta_p^2 = .08$.

A series of pairwise comparisons of gender indicated that males ($M = 2.48, SD = .81$) had significantly higher means than females ($M = 2.11, SD = .69$), $d = .50$ on the self-centered cognitive distortion. Males also had higher blaming others cognitive distortion ($M = 2.57, SD = .77$), than females ($M = 2.13, SD = .67$), $d = .61$. Males had significantly higher means on minimizing/mislabeling ($M = 2.52, SD = .82$) than females ($M = 2.1, SD = .70$), $d = .55$, and assuming the worst ($M = 2.37, SD = .75$) when compared to females, ($M = 2.02, SD = .62$), $d = .51$.

With respect to the problem categories, follow up one-way ANOVA and Tukey post hoc tests were used to determine the mean differences among the four self-serving cognitive distortions. The results of the between problem categories comparisons for self-serving cognitive distortions are presented in Table 26. There were no significant differences between the externalizing and co-occurring categories on any of the self-serving cognitive distortions.

Table 26. Problem Categories Comparisons on Self-Serving Cognitive Distortions

	EXT		INT		CO		NP			
Self-Serving Distortions	M	SD	M	SD	M	SD	M	SD	<i>F</i> (3, 347)	Comparisons*
Self-centered	2.81	.76	2.21	.68	2.85	.82	2.02	.64	30.01**	EXT, CO > INT, NP
Blaming others	2.77	.61	2.34	.76	2.89	.79	2.01	.62	28.17**	EXT, CO > INT, NP
Minimizing/mislabeling	3.01	.71	2.22	.71	2.74	.83	2.06	.66	29.85**	EXT, CO > INT, NP
Assuming the worst	2.71	.68	2.16	.59	2.75	.79	1.90	.53	40.86**	EXT, CO > INT, NP

Notes: EXT = Externalizing category; INT = Internalizing category; CO = Co-occurring category; NP = No problem category.

* $p < .05$. ** $p < .001$.

The results indicated that the externalizing category evinced higher levels of assuming the worst and blaming others when compared to the co-occurring, internalizing, and no problem categories. These results partially supported the hypotheses that the externalizing category would report higher levels of assuming the worst and blaming others when compared to the co-occurring, internalizing, and no problem categories.

The self-serving distortion of assuming the worst was reported by the externalizing category more than the internalizing category and no problem category, but no significant difference was found between the co-occurring and externalizing categories. The self-serving distortion of blaming others, contrary to the extant literature, was reported more by the co-occurring category, than the internalizing and no problem categories. Once again, there were no significant differences found between the co-occurring and externalizing categories on the reported scores for blaming others.

The multivariate test for the interaction between age and problem categories indicated that blaming others and assuming the worst were the only significant self-serving cognitive distortions among the problem categories. A series of one-way ANOVAs were used to determine the mean differences of blaming others and assuming the worst among the early and middle adolescents categorized as one of the four problem categories. As shown in Table 27, early adolescents in the externalizing problem category had significantly higher assuming the worst cognitive distortion than adolescents categorized as internalizing, co-occurring, or no problem. Middle adolescents in the co-occurring category had significantly higher assuming the worst cognitive distortions than adolescents categorized as internalizing, or no problem. No significant differences were found for the co-occurring or externalizing adolescents.

Table 27. Problem Categories Comparisons on Blaming others, Assuming the worst, and Age

Early Adolescents										
	EXT		INT		CO		NP			
Self-Serving Distortions	M	SD	M	SD	M	SD	M	SD	<i>F</i> (3, 141)	Comparisons*
Blaming others	2.96	.60	2.29	.73	2.71	.85	2.17	.65	8.69**	EXT, CO > INT, NP
Assuming the worst	2.95	.64	2.08	.54	2.49	.85	1.91	.53	17.91**	EXT > INT, CO, NP
Middle Adolescents										
	EXT		INT		CO		NP			
Self-Serving Distortions	M	SD	M	SD	M	SD	M	SD	<i>F</i> (3, 202)	Comparisons*
Blaming others	2.62	.58	2.38	.78	2.99	.76	2.00	.60	22.73**	CO, EXT > INT, NP
Assuming the worst	2.52	.66	2.19	.63	2.89	.73	1.89	.53	27.69**	CO, EXT > INT, NP

Notes: EXT = Externalizing category; INT= Internalizing category; CO = Co-occurring category; NP = No problem category.

* $p < .05$. ** $p < .001$.

For the blaming others cognitive distortion, early adolescents in the externalizing category had significantly higher mean scores than those in the internalizing, or no problem categories. No significant differences were found for the co-occurring or externalizing early adolescents. The middle adolescent externalizing category had significantly higher mean scores for the blaming others cognitive distortion, than either the internalizing or no problem categories. As with the early adolescents, no significant differences were found for the co-occurring or externalizing categories.

A second MANOVA was used to analyze the mean differences among adolescents' problem categories on self-debasing cognitive distortions. Both gender and age were also included in the analyses. The multivariate tests from the MANOVA indicated two significant main effects for the problem category, $F(12, 942) = 7.77, p = .001, \eta_p^2 = .08$, and for gender, $F(4, 356) = 6.05, p = .001, \eta_p^2 = .06$. The follow up ANOVAs indicated that only the overgeneralizing self-debasing cognitive distortion was significant for gender, $F(1, 359) = 11.92, p = .001, \eta_p^2 = .03$. Specifically, females had significantly higher overgeneralizing mean scores ($M = 11.64, SD = 4.67$) than males ($M = 11.13, SD = 4.54$).

Follow up one-way ANOVA and Tukey post hoc tests were used to determine the mean differences among problem categories and the four self-debasing cognitive distortions. The co-occurring category had the highest significant means for all the self-debasing cognitive distortions (see Table 28). When examining the mean scores for catastrophizing, adolescents in the co-occurring category had significantly higher means than those of adolescents in either the externalizing or no problem categories.

Table 28. Problem Categories Comparisons on Self-Debasing Cognitive Distortions

	EXT		INT		CO		NP			
Self-Debasing Distortions	M	SD	M	SD	M	SD	M	SD	<i>F</i> (3, 371)	Comparisons*
Catastrophizing	10.59	4.87	12.45	4.33	13.57	4.43	9.81	3.33	17.23**	CO > EXT, NP
Overgeneralizing	11.55	4.52	13.84	5.03	14.91	5.45	10.09	3.50	26.07**	CO, INT > EXT, NP
Personalizing	11.57	4.39	12.69	4.37	14.74	5.05	10.37	3.33	20.39**	CO > EXT, INT, NP
Selective abstraction	12.65	4.17	12.73	3.88	14.52	3.48	10.67	3.09	21.78**	CO > EXT, INT, NP

Notes: EXT = Externalizing category; INT = Internalizing category; CO = Co-occurring category; NP = No problem category.

* $p < .05$. ** $p < .001$.

Overgeneralizing was found to be significantly higher in the co-occurring category and the internalizing category, in comparison to externalizing or no problem categories. No significant differences between internalizing and co-occurring categories were found for overgeneralizing. Both personalizing and the selective abstraction cognitive distortions were significantly higher in the co-occurring category than the externalizing, internalizing or no problem categories.

In sum, the co-occurring category reported significantly higher scores for all four of the self-debasing cognitive distortions. The study hypothesis that the internalizing category would report higher levels of the self-debasing cognitive distortions of personalizing, selective abstraction, and overgeneralizing, was not supported. For catastrophizing, no significant differences were found between co-occurring and internalizing, nor were there any significant differences between the internalizing and externalizing categories. When examining overgeneralizing, no significant differences between the internalizing and externalizing categories were indicated. The next section presents the results of a series of repeated measures of ANOVAs, and subsequent Tukey post hoc comparisons. The ANOVAs were used to analyze which self-serving or self-debasing cognitive distortions differed within specific problem categories.

Within problem category differences and self-serving cognitive distortions. The results of the four ANOVAs, for the specific self-serving cognitive distortions, indicated that the externalizing, $F(3, 129) = 4.35, p = .006, \eta^2 = .092$, internalizing, $F(3, 180) = 3.40, p = .019, \eta_p^2 = .054$, and the no problem categories, $F(3, 570) = 12.839, p = .001, \eta_p^2 = .063$, had significant within category differences for specific self-serving cognitive

distortions. No significant within group differences for the co-occurring category were found, $F(3, 162) = 2.15, p = .096, \eta_p^2 = .038$.

Post hoc analyses of the externalizing category, revealed that adolescents in this category, reported significantly higher mean scores for the minimizing/mislabeling self-serving cognitive distortion ($M = 3.01, SD = .71$) than the self-centered ($M = 2.81, SD = .76$), $d = .27$, blaming others ($M = 2.77, SD = .61$), $d = .36$, and assuming the worst self-serving distortion ($M = 2.71, SD = .68$), $d = .43$. Adolescents in the internalizing category reported significantly higher mean scores for blaming others ($M = 2.35, SD = .76$), than minimizing/mislabeling ($M = 2.22, SD = .71$), $d = .18$, and assuming the worst self-serving cognitive distortions ($M = 2.16, SD = .59$), $d = .28$. The self-centered distortion did not differ significantly from the minimizing/mislabeling, assuming the worst, or blaming others distortions. Adolescents in the no problem category, reported significantly different assuming the worst, ($M = 1.90, SD = .53$) than self-centered ($M = 2.02, SD = .64$), $d = .20$, blaming others ($M = 2.01, SD = .62$), $d = .02$, or minimizing/mislabeling ($M = 2.06, SD = .66$), $d = .27$, self-serving cognitive distortions. No significant differences were found between the self-centered, blaming others and minimizing/mislabeling distortions.

Within problem category differences and self-debasing cognitive distortions. The results of the four ANOVAs for the specific self-debasing cognitive distortions indicated that the externalizing, $F(3, 144) = 6.87, p = .001, \eta_p^2 = .125$, internalizing, $F(3, 183) = 3.21, p = .024, \eta_p^2 = .05$, and the no problem categories, $F(3, 615) = 6.65, p = .001, \eta_p^2 = .07$, had significant within category differences for specific self-debasing cognitive

distortions. No significant within group differences for the co-occurring category were found, $F(3, 171) = 2.37, p = .072, \eta_p^2 = .04$.

Post hoc analyses of the externalizing category revealed that adolescents in this category reported significantly higher mean scores for selective abstraction ($M = 12.65, SD = 4.17$), than catastrophizing ($M = 10.59, SD = 4.87$), $d = .45$, overgeneralizing ($M = 11.55, SD = 4.52$), $d = .25$, or personalizing ($M = 11.57, SD = 4.39$), $d = .25$, self-debasing cognitive distortions. Furthermore, adolescents in the externalizing category reported significantly higher personalizing ($M = 11.57, SD = 4.39$) than catastrophizing ($M = 10.59, SD = 4.87$), $d = .21$. No significant differences were found between personalizing and overgeneralizing.

Within the internalizing category, post hoc analyses showed that adolescents reported significantly higher means for overgeneralizing ($M = 13.83, SD = 5.03$) than either catastrophizing ($M = 12.45, SD = 4.32$), $d = .29$, personalizing ($M = 12.69, SD = 4.37$), $d = .24$, or selective abstraction ($M = 12.73, SD = 3.88$), $d = .24$, self-debasing cognitive distortions. No significant differences were found between selective abstraction, personalizing, or catastrophizing.

Within the no problem category, adolescents reported significantly higher means for selective abstraction ($M = 10.67, SD = 3.09$) than catastrophizing ($M = 9.8, SD = 3.33$), $d = .27$, or overgeneralizing ($M = 10.08, SD = 3.5$), $d = .18$. Furthermore, self-reported personalizing cognitive distortions ($M = 10.36, SD = 3.33$) had significantly higher means than the catastrophizing ($M = 9.8, SD = 3.33$), $d = .17$, distortions. No significant differences were found between the self-reported overgeneralizing, catastrophizing and personalizing self-debasing cognitive distortions, nor were there any

significant differences between personalizing and selective abstraction distortion within the no problem categories.

Recall that a MANOVA, computed earlier in this section, found an interaction effect between age and problem categories. The multivariate test for the interaction between age and problem categories indicated that blaming others and assuming the worst were the only significant self-serving cognitive distortions. A series of ANOVAs, 2 (blaming others & assuming the worst) x 2 (early and middle adolescents), were conducted to examine the within problem categories differences of these specific self-serving cognitive distortions. The results of the ANOVA indicated that for the early adolescents, only the internalizing, $F(1, 23) = 4.46, p = .046, \eta_p^2 = .162$, and no problem categories, $F(1, 89) = 33.38, p = .001, \eta_p^2 = .273$, differed significantly for blaming others and assuming the worst. Specifically, the early adolescents in the internalizing category reported significantly higher blaming others ($M = 2.28, SD = .72$) than assuming the worst distortions ($M = 2.08, SD = .53$), $d = 1.1$. A similar result was found for the no problem category, where blaming others ($M = 2.14, SD = .64$) was significantly higher than assuming the worst ($M = 1.89, SD = .53$), $d = .43$.

The results of the ANOVA for the middle adolescents were similar to those of the early adolescents. That is, only the internalizing, $F(1, 40) = 7.47, p = .009, \eta_p^2 = .157$, and no problem categories, $F(1, 119) = 12.78, p = .001, \eta_p^2 = .097$, had significantly different means for blaming others and assuming the worst. Middle adolescents in the internalizing category had significantly higher mean scores for blaming others ($M = 2.35, SD = .77$) than assuming the worst ($M = 2.18, SD = .62$), $d = .24$, and those in the no

problem category also had significantly higher mean scores for blaming others ($M = 1.98$, $SD = .60$) than assuming the worst ($M = 1.86$, $SD = .53$), $d = .212$.

As previously indicated, the examination of differences between specific self-serving or debasing cognitive distortions within specific problem categories have not been presented in the extant literature. Consequently, the present results are exploratory and therefore will not be evaluated on whether or not they have supported a set of hypotheses.

Specific Cognitive Distortions, Age, and Gender in the Prediction of Externalizing and Internalizing

In this section, hierarchical multiple regression analyses were used to analyze the research question of which specific self-serving cognitive distortions predicted externalizing problems and which specific self-debasing cognitive distortions predicted internalizing problems. Furthermore, an analysis of which specific self-serving cognitive distortions made the strongest unique contribution to explaining externalizing problems were undertaken. The same analysis was made for specific self-debasing cognitive distortions. Standardized β values were used to determine which specific cognitive distortions were significant. In order to determine the importance of the predictor variables, the RPI was used (Thomas et al., 1998).

The hierarchical method of regression analysis was employed because of its prior use in the literature examining similar research questions (e.g., Barriga et al., 2008), the researcher's control over the order of entry of the predictor variables, and it is the suggested analytical approach when testing hypotheses (Tabachnick & Fidell, 2001).

The use of statistical and graphical data indicated that there were no violations of the assumptions of linearity, normality, multicollinearity, or homoskedasticity for the analyses using the self-reported internalizing and externalizing problems as dependent variables. A few outliers were found, but Cook's distance values were below 1, indicating no undue influence on the models from these data points (Field, 2005).

For the analyses using teacher-reported internalizing and externalizing problems as dependent variables, statistical and graphical data indicated that there were no violations of the assumptions of linearity, multicollinearity, or homoskedasticity. A few outliers were found, but Cook's distance values were below 1, indicating no undue influence on the models from these data points. Based on the scatterplot and normal probability plot, the assumption of normality seemed to have been violated. The following sections present the results of the hierarchical regression analyses for specific self-serving, self-debasing cognitive distortions and self-reported internalizing and externalizing problems, followed by the hierarchical regression analyses using teacher-reported problems.

Specific self-serving cognitive distortions and self-reported externalizing. In order to reduce the potentially confounding effects of age, gender, and internalizing on externalizing problems, age, gender, and internalizing were controlled for and entered in step 1 of the regression analysis (e.g., Barriga et al., 2000; Garnefski et al., 2005). This model accounted for 25% of the variance in externalizing problems.

In step 2, specific self-serving cognitive distortions (self-centered, blaming others, minimizing/mislabeling, and assuming the worst) were entered. The model explained 50%, $F(7, 344) = 49.77, p = .001$, of variance in externalizing problems. The

addition of the specific self-serving cognitive distortions, when controlling for age, gender, and internalizing, explained an additional 26% of variance $\Delta R^2 = .255$, F change (4, 344) = 44.163, $p = .001$. In step 2, four predictor variables significantly predicted externalizing problems: internalizing problems, $\beta = .280$, $p = .001$, self-centered $\beta = .172$, $p = .021$, minimizing/mislabeling, $\beta = .240$, $p = .002$, and assuming the worst, $\beta = .266$, $p = .001$ (see Table 29).

Table 29. Summary of Hierarchical Regression Analysis for Variables Predicting Self-Reported Externalizing Problems ($N = 387$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Age	.579	.459	.059
Gender	-2.410	.922	-.122*
Internalizing	.442	.044	.466**
Step 2			
Age	.158	.383	.016
Gender	.200	.789	.010
Internalizing	.266	.041	.280**
Self-centered	2.197	.947	.172*
Blaming others	-1.114	1.028	-.084
Minimizing/mislabeling	3.032	.986	.240*
Assuming the worst	3.734	1.09	.266*

Notes: Sex was coded as 1 = male and 2 = female.

* $p < .05$. ** $p < .001$.

In order to gain a more accurate indication of variable importance, a final model was created by removing all the nonsignificant variables found in step 2 of the regression analysis, and the RPI calculated for the remaining variables (Thomas et al., 1998). The final model explained 50% of the total variance. Based on the operating principle value

of .13, the RPI of assuming the worst indicated that it was the most important predictor, relative to the other variables in the model, of externalizing problems, followed by internalizing, minimizing/mislabeling, and self-centered (See Table 30).

Table 30. Summary of Hierarchical Regression Analysis for the Final Model Predicting Self-Reported Externalizing Problems ($N = 387$)

Variable	B	$SE\ B$	β	Relative Pratt Index
Final Model				
Internalizing	.262	.040	.276**	.27
Self-centered	1.942	.921	.152*	.17
Minimizing/mislabeling	2.794	.942	.222*	.26
Assuming the worst	3.188	.995	.227**	.29

Note: Relative Pratt Index $> .13$ is considered an unimportant predictor in the model.

* $p < .05$. ** $p < .001$.

Specific self-debasing cognitive distortions and self-reported internalizing. As in the prior regression analyses, the potentially confounding variables of age, gender, and externalizing were controlled for and entered in step 1 of the regression analysis (e.g., Barriga et al., 2000; Garnefski et al., 2005). This model accounted for 23% of the variance in internalizing problems. In step 2, specific self-debasing cognitive distortions (catastrophizing, personalizing, overgeneralizing, selective abstraction) were entered. The model explained 41.4%, $F(7, 368) = 37.19$, $p = .001$, of variance in internalizing problems. The addition of the specific self-debasing cognitive distortions, while controlling for age, gender, and externalizing, explained an additional 18.2% of variance, $\Delta R^2 = .182$, $F\ change(4, 368) = 28.551$, $p = .001$. In step 2, externalizing problems, $\beta =$

.313, $p = .001$, catastrophizing, $\beta = .164$, $p = .012$, and, overgeneralizing, $\beta = .169$, $p = .013$, had statistically significant β values (see Table 31).

Table 31. Summary of Hierarchical Regression Analysis for Variables Predicting Self-Reported Internalizing Problems ($N = 387$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Age	.553	.473	.053
Gender	.388	.959	.019
Externalizing	.502	.049	.476**
Step 2			
Age	.778	.423	.075
Gender	-.411	.871	-.020
Externalizing	.331	.047	.313**
Catastrophizing	.412	.163	.164*
Overgeneralizing	.378	.152	.169*
Personalizing	.229	.158	.093
Selective abstraction	.258	.169	.092

Notes: Sex was coded as 1 = male and 2 = female.

* $p < .05$. ** $p < .001$.

In order to gain a more accurate indication of variable importance, a final model was created by removing all the nonsignificant variables found in step 2 of the regression analysis and the RPI calculated for the remaining variables. The final model explained 40% of the total variance. Based on the operating principle value of .17, the RPI of the externalizing problems indicated that they were the most important predictors, relative to the other variables in the model, of internalizing problems followed by overgeneralizing then catastrophizing (see Table 32).

Table 32. Summary of Hierarchical Regression Analysis for the Final Model Predicting Self-Reported Internalizing Problems ($N = 387$)

Variable	B	$SE\ B$	β	Relative Pratt Index
Final Model				
Externalizing	.372	.045	.353*	.42
Catastrophizing	.548	.146	.218*	.26
Overgeneralizing	.553	.133	.247*	.32

Notes: Relative Pratt Index $> .17$ is considered an important predictor in the model.

* $p < .001$.

Specific self-serving cognitive distortions and teacher-reported externalizing. In order to reduce the potentially confounding effects of age, gender, and internalizing on externalizing problems, age, gender, and internalizing were controlled for and entered in step 1 of the regression analysis (e.g., Barriga et al., 2000; Garnefski et al., 2005). This model accounted for 30% of the variance in externalizing problems. In step 2, specific self-serving cognitive distortions (self-centered, blaming others, minimizing/mislabeling, and assuming the worst) were entered. The model explained 31%, $F(7, 261) = 17.08$, $p = .001$, of variance in externalizing problems. The addition of the specific self-serving cognitive distortions, when controlling for age, gender, and internalizing, explained an additional, nonsignificant, 2% of variance, $\Delta R^2 = .019$, $F \text{ change}(4, 261) = 1.631$, $p = .129$. In step 2, only internalizing problems were significant predictors of externalizing problems (see Table 33). The RPI was not calculated for this model as only one predictor was significant. These results indicated that the addition of the specific self-serving cognitive distortions did not explain any additional variance than what was explained by internalizing problems in the first step of the model.

Table 33. Summary of Hierarchical Regression Analysis for Variables Predicting
Teacher-Reported Externalizing Problems ($N = 294$)

Variable	B	$SE\ B$	β
Step 1			
Age	-.271	.341	-.042
Gender	-.401	.678	-.031
Internalizing	.527	.052	.536*
Step 2			
Age	-.405	.346	-.062
Gender	.008	.704	.001
Internalizing	.529	.052	.537*
Self-centered	-.073	.845	-.009
Blaming others	-.697	.910	-.080
Minimizing/mislabeling	.973	.862	.116
Assuming the worst	.991	.956	.106

Notes: Sex was coded as 1 = male and 2 = female.

* $p < .001$.

Specific self-debasing cognitive distortions and teacher-reported internalizing. As in the previous regression analyses, the potentially confounding variables of age, gender, and externalizing were controlled for and entered in step 1 of the regression analysis (e.g., Barriga et al., 2000; Garnefski et al., 2005). This model accounted for 31% of the variance in internalizing problems. In step 2, specific self-debasing cognitive distortions (catastrophizing, personalizing, overgeneralizing, selective abstraction) were entered. The model explained 31% of variance in internalizing problems, $F(7, 278) = 18.12, p = .001$. The addition of the specific self-debasing cognitive distortions, while controlling for age, gender, and externalizing, explained an additional, nonsignificant, .6% of variance, $\Delta R^2 = .006, F \text{ change}(4, 278) = .620, p = .65$.

In step 2, only externalizing problems significantly predicted internalizing problems (see Table 34). The RPI was not calculated for this model as only one predictor was significant. These results indicated that the addition of the specific self-debasing cognitive distortions did not explain any additional variance than what was explained by externalizing problems in the first step of the model.

Table 34. Summary of Hierarchical Regression Analysis for Variables Predicting Teacher-Reported Internalizing Problems ($N = 294$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Age	-.685	.331	-.104*
Gender	.789	.661	.059
Externalizing	.535	.051	.527**
Step 2			
Age	-.652	.339	-.099
Gender	.659	.686	.049
Externalizing	.542	.051	.534**
Catastrophizing	.016	.130	.010
Overgeneralizing	.091	.121	.064
Personalizing	.072	.124	.046
Selective abstraction	-.188	.133	-.105

Notes: Sex was coded as 1 = male and 2 = female.

* $p < .05$. ** $p < .001$.

This chapter presented the results of the analyses used to answer the research questions guiding this study. With respect to self-reported internalizing and externalizing, the results of both regression and correlational analyses strongly suggest that cognitive distortions are specific and significantly associated to internalizing and externalizing. That is, self-serving cognitive distortions are specific to externalizing problems and self-

debasing cognitive distortions are specific to internalizing problems. These results are supported by prior findings in the literature (e.g., Barriga et al., 2000). Similar results were not found when analyzing teacher-reported internalizing and externalizing problems, with one exception being the significant association between teacher-reported externalizing and self-serving cognitive distortions.

The regression analyses further indicated that specificity between cognitive distortions and self-reported internalizing and externalizing did indeed exist. Further analyses revealed that there were significant differences in the specific cognitive distortions of adolescents categorized as externalizing, internalizing, co-occurring and no problem. These differences in specific cognitive distortions were evident both with and between the problem categories. Once again, the between category difference have been explored in the literature and some of the present results have supported prior findings. No study in the extant literature has examined within group differences as such the results are a novel contribution. The internalizing, externalizing and cognitive distortions literature is relatively new, but a robust finding in the literature is the gender differences in internalizing and externalizing. The results of this study failed to find such as difference.

Analyses examining gender differences on internalizing and externalizing problems was done via two different analyses – one which examined gender on T scores from the YSR and another that used the raw scores. The analyses when using T scores yielded no significant gender difference. The lack of significant gender differences for internalizing and externalizing problems is inconsistent with findings in the extant literature which indicate that males tend to externalize more and internalize less than

females (e.g., Rescorla et al., 2007; Zahn-Waxler et al., 2008). A notable exception to these findings was reported by Barriga et al. (2000) who did not find a significant gender difference for internalizing and externalizing problems. Although Barriga and his colleagues do caution that this result may have been due to the large amount of incarcerated youth in the study, or because of the small sample size of the community-based participants, thus reducing statistical power. The fact that the present study did not reveal any significant gender differences for externalizing or internalizing problems may have been the result of the use of *T* scores to analyze the mean differences between problems and gender. Therefore, because *T* scores in the ASEBA measures were specific to either males or females, comparing males and females *T* scores may produce unclear results (Barriga et al., 2001). As such, raw scores were used in subsequent analyses, and gender differences were found for internalizing and externalizing problems.

The next chapter will discuss these results and how they relate to prior research and can potentially inform future research.

CHAPTER 5

DISCUSSION

Extending the Literature

The present study extended the research on the relation between cognitive distortions and dimensions of psychopathology during adolescence, in four ways. First, a gap in the literature was addressed by recognizing the importance of co-occurring internalizing and externalizing problems and the potential association with cognitive distortions. Second, the literature was extended by including and studying specific self-serving and self-debasing cognitive distortions not yet examined in a North American community sample of adolescents in the internalizing and externalizing literature. Similarly, general self-serving and self-debasing cognitive distortions have received very little empirical attention in the North American community sample of adolescents. Third, including both male and female participants provided more generalizable results and potentially illuminated any gender differences that may exist in type and magnitude of cognitive distortions associated with externalizing and internalizing problems in community samples. Fourth, the use of community-based adolescents as the primary participants in the study of cognitive distortions and internalizing and externalizing problems are rare. Adolescence is a period when depression increases sharply between the ages of 13 and 15 and reaches its peak between the ages of 17 and 18 (Peterson et al., 1993). Similarly, according to Broberg et al. (2001), externalizing problems reach their peak between the ages of 15 and 16. Although many of the studies on cognitive distortions related to internalizing and externalizing problems have utilized incarcerated and clinically diagnosed youth, few studies have specifically dealt with a community

sample of adolescents. However, these studies suffer from issues of generalizability such as the participants being from a different country (e.g., Leung & Wong, 1998) or overrepresentation of specific ethnic groups (e.g., Barriga et al., 2000).

Purpose of the Present Study

The purpose of this study was to investigate the relation of specific and general self-debasing and self-serving cognitive distortions to self- and teacher-reported internalizing, externalizing, and co-occurring problems among a community-sample of adolescents. Accordingly, four research questions were developed to guide the analyses. These questions were:

1. What is the relation of self-serving cognitive distortions and self-debasing cognitive distortions to externalizing and internalizing problems, respectively?
2. What are the relations of cognitive distortions, age, and gender in predicting externalizing and internalizing problems?
3. Are there significant differences among adolescents categorized as internalizing, externalizing, co-occurring, or no problem with respect to their self-reported specific self-serving (self-centered, blaming others, minimizing/mislabeling, and assuming the worst), or self-debasing (catastrophizing, personalizing, overgeneralizing, and selective abstraction) cognitive distortions?
4. Which of the specific self-serving cognitive distortions most strongly predicts externalizing problems, and which of the specific self-debasing cognitive distortions most strongly predicts internalizing problems?

Two analytical strategies were used to answer the research questions of whether self-debasing or self-serving cognitive distortions were more highly associated with

teacher and self-reported internalizing or externalizing problems respectively, and whether these distortions uniquely predict teacher and self-reported internalizing and externalizing in community adolescents. The first strategy was to examine the bivariate associations (correlations) between the variables of interest. The second strategy was the use of the multivariate approach (hierarchical regression) in order to provide information on the unique contributions of the variables of interest. The next section will discuss the results of the current study by focusing on each research question in order, and then the findings will be summarized in the implication section.

Associations Between Cognitive Distortions and Self-Reported Problems

The results of the correlation analyses showed that self-serving cognitive distortions were more highly correlated with externalizing behaviour than self-debasing cognitive distortions, and that self-debasing cognitive distortions were more highly correlated with internalizing problems. The magnitude of the associations strongly indicated that the self-serving and self-debasing distortions were significantly different in their association with externalizing and internalizing problems, respectively. These results are predominantly consistent with previous studies of internalizing and externalizing problems that have examined the same cognitive distortions used in the present study (e.g., Barriga et al., 2000; Barriga et al., 2001; Barriga et al., 2008; Liao et al., 1998). Some notable differences exist between the current study's participants and those of the aforementioned studies. For example, the Barriga et al. (2008) and Liao et al. (1998) studies consisted of only male participants, and the Barriga et al. (2001) study consisted of university students. The lack of females and older participants in these studies may limit their generalizability. As such the current study has extended Barriga et

al. (2008) and Liao et al. (1998) results to a community based sample of female as well as males, furthermore the results of this study have extended Barriga et al.'s (2001) findings to a younger sample.

It should be noted that the cited studies did not indicate whether or not the correlations between cognitive distortions and internalizing, externalizing problems were significantly different. The current study uniquely contributed the extant literature by analyzing whether correlations between cognitive distortions, internalizing and externalizing were significantly different.

A partial exception to the aforementioned findings was reported by Leung and Wong (1998) who, in addition to concluding that self-debasing cognitive distortions were associated with internalizing problems, also reported that externalizing adolescents did not report higher levels of cognitive distortions than the normal controls. Leung and Wong's (1998) results supported the association of self-debasing cognitive distortions and internalizing problems in a community sample, but failed to find a similar association with externalizing problems.

The primary reason for the lack of significant association between cognitive distortions and externalizing problems in Leung and Wong's (1998) study would seem to be the use of the CNCEQ, a measure of self-debasing cognitive distortions, as the only measure of distortions used in the Leung and Wong study. Based on the current state of knowledge, self-debasing cognitive distortions would not be expected to be strongly associated with externalizing problems (e.g., Barriga et al., 2000; Barriga et al., 2008), thus providing an explanation for Leung and Wong's results that cognitive distortions were not associated with externalizing problems. The current study differed from Leung

and Wong's (1998) study, in that it utilized a questionnaire designed to specifically measure self-serving cognitive distortions (HIT), and the results of the correlation analyses indicated a significant association between cognitive distortions and externalizing.

Past research has found significant relations between cognitive distortions and internalizing and externalizing problems (using the HIT and CNCEQ), in Caribbean males, and in community-based males and females ranging in ages 15 to 19 (e.g., Barriga et al., 2008; Barriga et al. 2000). In finding a substantial association between general cognitive distortions and internalizing, externalizing problems, the current study has contributed uniquely, and thus added to the literature by using a substantially larger North American community-based sample of younger males and females, and without the potentially confounding inclusion of incarcerated youth in the analyses (e.g., Barriga et al., 2000).

Gender Differences

The association of cognitive distortions to internalizing and externalizing problems is well supported in the limited research, whether it included male or female participants. In the current study, in addition to including all participants in the correlational analyses, males and females were also analyzed separately. Given the significant magnitude of the correlations found in the present study, it is clear that the cognitive distortions association with internalizing and externalizing problems is evident in both males and females.

The analyses revealed that males' and females' self-serving cognitive distortions were more highly associated with externalizing problems than were self-debasing

cognitive distortions. Furthermore, male' and female's self-debasing cognitive distortions were more highly associated with internalizing problems when compared to their self-serving cognitive distortions. These results regarding gender mirror those of the total sample findings combined and provide a unique contribution to the literature, in that significant associations for gender have not been previously reported in the literature.

Although the magnitudes of the correlations were found to be significant for males' and females' association with cognitive distortions, further analyses were undertaken to see whether or not the gender differences in associations were statistically significant. Prior research has not looked beyond the degree of correlation. Consequently, nonsignificant differences in associations between distortions may have been missed, overlooking the possibility that both self-serving and self-debasing cognitive distortions are both associated with internalizing or externalizing problems. In fact, the current results indicated that, despite females having a higher magnitude of association of self-debasing cognitive distortions to internalizing problems than self-serving cognitive distortions, there were no significant differences found between the magnitude of self-debasing and self-serving cognitive distortions and their association with internalizing problems in females.

These results suggest that for adolescent females, both self-debasing and self-serving cognitive distortions are associated with internalizing problems. This result may be explained by the high correlation between internalizing and externalizing problems in the female participants ($r = .60$). Such a high correlation would seem to indicate a co-occurrence of internalizing and externalizing problems in these participants (Angold et al., 1999). It should be noted that measuring association between cognitive distortions

and participants with co-occurring internalizing and externalizing problems was not the focus of this current study, nevertheless, given that co-occurrence, by this study's definition is the co-existence of internalizing and externalizing problems, it would seem plausible that there could also be an overlap between self-serving and self-debasing cognitive distortions (Barriga et al., 2000; Gibbs, 2009). In line with this argument, Quiggle et al. (1992) concluded that children exhibiting co-occurring conduct problems and depression shared similar cognitive patterns in an additive manner. Specifically, Quiggle et al. posited that those in their co-occurring group who were aggressive, expressed similar cognitions to those who were labeled depressed, and vice versa.

In a more recent article, Barriga et al. (2008) found that the specific self-serving cognitive distortion of assuming the worst was associated with both internalizing and externalizing problems in males. Given that the Barriga et al. (2008) and Quiggle et al. (1992) studies differed, from the current, with respect to sample composition (males and children) and the operationalization of internalizing (Childhood Depression Inventory; Kovaks, 1992), the finding that female adolescents, in the current sample, did not indicate that self-serving and self-debasing distortions were significantly different in their association with internalizing problems may be unique to the current study. Whether or not this is the case, future studies reporting a significant association between self-debasing cognitive distortions to internalizing may need to analyze this association further to establish whether or not a significant difference between self-serving and self-debasing cognitive distortions exists.

Age Differences

Analyses examining age differences demonstrated a high association of self-serving and self-debasing cognitive distortions to externalizing and internalizing problems, respectively among the middle adolescents. Among early adolescents, self-serving cognitive distortions were also found to be more highly associated with externalizing problems than self-debasing cognitive distortions, and self-debasing cognitive distortions were found to be more highly associated with internalizing problems than self-serving cognitive distortions. These results are not consistent with previous findings, which reported no significant age associations to cognitive distortions (e.g., Barriga et al., 2000; Frey & Epkins, 2002; Liao et al., 1998).

The difference in results, for age, between the current study and previous studies may be attributable to methodology. All three studies (Barriga et al., 2000; Frey & Epkins, 2002; Liao et al., 1998) included incarcerated adolescents, with two using community-based adolescents as comparison groups. Barriga et al. (2000) was the only study of the three that included both community-based males and females, but the mean age of their community sample was 16, whereas the mean age in the present sample was 14. The difference in age of the participants may be pertinent because both internalizing and externalizing tend to be higher in middle adolescents (Achenbach & Rescorla, 2001), such as those in the Barriga study.

Finally, the inclusion of incarcerated youth in two of the three previous research studies (e.g., Barriga et al., 2000; Frey & Epkins, 2002), makes generalizing their results to the current study difficult. Specifically, the Barriga et al. (2000) study, which used most of the same measures as the current study (e.g., HIT, CNCEQ, YSR) only reported

the correlations of the total sample, as such both community and incarcerated youth were analyzed as a group. Given that incarcerated youth tend to report significantly higher levels of self-debasing and self-serving cognitive distortions, and internalizing and externalizing problems than community comparison groups (Barriga et al., 2000, Liao et al, 1998), generalization to a community sample may be problematic. Based on these aforementioned differences, the association between age and cognitive distortions found in the current study expands on the work of Barriga, Liao and their colleagues by examining a younger, and larger sample of community-based adolescents.

The results of the correlational analyses from the current study have supported the study hypothesis, with respect to self-serving cognitive distortions association with externalizing problems, and self-debasing cognitive distortions association with internalizing problems. The findings of the correlational analysis from the current study would suggest that the type of distortion may be a strong indicator of the type of problem behaviour engaged in by adolescents. Specifically, if an adolescent's levels of self-serving cognitive distortions are significantly higher than their self-debasing cognitive distortions, the adolescent is more likely to exhibit more externalizing problems than internalizing. Conversely, an adolescent who engages in significantly higher self-debasing distortions than self-serving cognitive distortions is more likely to have internalizing problems.

The current study has extended the literature by examining gender and age differences with regard to the relation of cognitive distortions to internalizing and externalizing. In sum, by further analyzing whether the association between cognitive distortions and internalizing, externalizing found in males and females, as well as, early

and middle adolescents differed significantly, this study was able to highlight the fact that, although females' cognitive distortion differed in the magnitude of association with internalizing and externalizing problems, no significant differences were found between the magnitudes of association.

Thus, both self-debasing and self-serving cognitive distortions, in females, were associated to internalizing problems. Finally, this set of results has potentially added to the extant literature by broadening the scope of analyses to the inclusion of measuring whether correlations are significantly different, and therefore quantifying whether the associations between cognitive distortions are statistically different from each other, or equally associated with internalizing or externalizing problems.

Specificity of Cognitive Distortions to Externalizing and Internalizing

The associations between self-serving and self-debasing cognitive distortions to externalizing and internalizing, respectively, have been highlighted in this current study. In order to provide more complete examination of the specificity of cognitive distortions, and in turn illuminate whether self-serving and self-debasing cognitive distortions uniquely predicted internalizing and externalizing problems, hierarchical regression analyses were performed.

Bivariate associations provide a basis by which one can examine the relationship between two variables, but do not, typically, take into account other potentially important variables. Therefore, when running the hierarchical regressions, age, gender, and internalizing or externalizing were used as control variables because these variables were shown to be associated with internalizing or externalizing problems. By controlling for potentially confounding variables, a clearer and stronger test of whether cognitive

distortions are able to uniquely predict internalizing or externalizing problems was possible.

General Cognitive Distortions and Internalizing, Externalizing Problems

In the present study, general self-serving cognitive distortions and internalizing problems were found to be unique and significant predictors of externalizing problems, accounting for 49% of the variance. Self-debasing cognitive distortions and externalizing problems were also found to be unique and significant predictors of internalizing problems, accounting for 41% of the variance. In both cases, the amount of variance explained by the two variables was considerable. A novel statistical approach, the Relative Pratt Index (RPI), was utilized to measure relative importance of each predictor variable, which allowed an intuitive comparison between variables.

When the relative importance of each variable was measured using the RPI, internalizing accounted for 26% of the variance when predicting externalizing problems, and externalizing accounted for 38% of the variance when predicting internalizing problems. These set of results indicated an association between internalizing and externalizing, which is expected, given that co-occurrence between internalizing and externalizing is well documented (e.g., Achenbach & Rescorla, 2001; Angold et al., 1999; Barriga et al., 2000), and analyses from the current study found a significant association between these two variables.

What is more relevant to the research question addressing specificity of cognitive distortions are the findings in the present study in which self-serving cognitive distortions were the most important predictor, relative to the other variables in the model, of externalizing, and self-debasing distortions were the most important predictor, relative to

the other variables in the model, of internalizing. Moreover, the relative importance of self-serving cognitive distortions as a predictor of externalizing problems was .74.

Therefore, self-serving cognitive distortions account for a remarkable 74% of the total final model variance, when predicting externalizing problems and controlling for gender, age, and externalizing. No less remarkable, self-debasing cognitive distortions accounted for 62% of the total final model variance, when predicting internalizing problems and controlling for gender, age, and externalizing.

These results support those of previous studies that have used similar measures and analyses to examine cognitive distortion specificity (e.g., Barriga et al., 2000; Barriga et al., 2008). Although, as noted previously, that participants from these previous studies included a small sample ($n = 66$) of community-based adolescents (Barriga et al., 2000) or only adolescent boys (Barriga et al., 2008), a substantive difference from the present sample of community-based adolescents. Furthermore, both of these studies failed to control for the potentially confounding effects of gender and age in their regression analyses. The current study supported previous results indicating specificity among males and a small group of community based adolescents but provided a more stringent analysis, of a larger sample, by controlling for potentially confounding variables.

In sum, the findings from the analyses of the research questions that focused on whether self-serving cognitive distortions were specific to externalizing problems, and whether self-debasing cognitive distortions were specific to internalizing problems, strongly indicated that with adolescents in the present sample: (a) Self-serving cognitive distortions were specifically associated with externalizing problems, and self-debasing cognitive distortions were specifically associated with internalizing problems, moreover,

the specific associations were *significantly* different from each other, (b) self-serving and self-debasing cognitive distortions were the most important *specific* predictors, relative to the other variables in the model, of externalizing and internalizing problems, respectively, even when accounting for the high association found between internalizing and externalizing in both the current ($r = .48$) and previous studies (e.g., Achenbach & Rescorla, 2001). It should be noted that although the results indicate as strong specificity of self-serving distortions to externalizing problems, and self-debasing distortions to internalizing, this does not preclude the possibility that self-debasing distortions may also be associated to externalizing behaviours, and self-serving distortions associated to internalizing problems. In fact, the results of the correlation analyses, showing significant associations between self-serving distortions and internalizing, and self-debasing distortions to externalizing, from the present study would indicate as such.

What can be argued is that self-serving distortions explanatory power is reduced in the presence of self-debasing distortions and the other variables in the model. As such, self-serving distortions are not significantly important relative predictors of internalizing problems. Similarly, self-debasing distortions explanatory power is reduced in the presence of self-serving distortions and the other variables in the model. Thus, self-debasing distortions are not significantly important relative predictors of externalizing problems. The next section will discuss the results of the within and between problem category differences in relation to specific cognitive distortions.

Specific Cognitive Distortions and Within/Between Problem Category Differences

One goal of the present study was to extend the literature by examining which specific self-serving and self-debasing cognitive distortions were most prevalent among a

community-based sample of adolescents categorized as externalizing, internalizing, co-occurring, or no problem. Similar categories have been used in prior studies (e.g., Epkins, 2000, Garnefski et al., 2005), but with younger or culturally diverse participants than those in the present sample. In addition to examining between group differences, the current study also examined within group differences, which, to date, have not been reported in the literature.

Gender Differences in Specific Cognitive Distortions and Self-Reported Problems

Results indicated that adolescent males did not significantly differ from females in their specific self-debasing cognitive distortions, suggesting that adolescent males and females who reported internalizing problems endorsed similar cognitive distortions. Differences were found, between male and female adolescents, for specific self-serving cognitive distortions. Males reported using higher levels of all four of the specific self-serving cognitive distortions when compared to females. Of note is the lack of research reporting any significant gender differences with respect to specific cognitive distortions (Garnefski et al., 2005; Weems et al, 2001).

The finding, in the current study, that males differed on the magnitude of self-serving cognitive distortions when compared to females, may be a consequence of adolescent males' higher level of externalizing than females. Given the strong empirical association between self-serving cognitive distortions and externalizing, the fact that males have higher levels of specific self-serving cognitive distortions is not unexpected, and the higher levels of specific self-serving cognitive distortions may explain the significant differences between males and females because differences may be easier to detect in males than females.

What was unexpected was the lack of significant differences in self-reported *T* - scores for internalizing and externalizing problems between males and females. The gender difference in internalizing and externalizing problems is a particularly robust finding in both community and clinical samples (e.g., Rescorla et al., 2007; Zahn-Waxler et al., 2008). Contrary to the aforementioned studies, Barriga et al. (2000) reported no significant differences between males and females in their study, but they used a predominantly incarcerated sample. As such, the lack of significant difference, between males and females, in the present sample would seem to be anomalous.

The lack of significant gender differences may have been the result of using *T* scores for the analyses instead of raw scores as suggested by Barriga et al. (2001). Specifically, because *T* scores in the ASEBA measures were specific to either males or females, comparing males and females *T* scores may have produced unclear results (Barriga et al., 2001). As such, raw scores were used in subsequent analyses, and gender differences were found for internalizing and externalizing problems. These findings are consistent with the extant literature (e.g., Rescorla et al., 2007; Zahn-Waxler et al., 2008).

Specific Self-Serving Cognitive Distortions and Problem Categories

The findings from the current study indicated that there were significant differences between the internalizing, externalizing, co-occurring, or no problem categories, and specific self-serving cognitive distortions (self-centered, blaming others, minimizing/mislabeling, assuming the worst). In particular, the specific cognitive distortions of self-centered, blaming others, minimizing/mislabeling and assuming the worst, were most evident in the externalizing and co-occurring adolescents, when compared to adolescents categorized as internalizing or no problem.

These results were partially supported by the findings of Frey and Epkins (2002), who found that assuming the worst and blaming others were highest in their co-occurring group. These findings diverge from the current study, in that, Frey and Epkins did not find any differences between the problem groups for self-centered or minimizing/mislabeling, nor did they report any significant differences between the externalizing group and the other three problem groups on any of the specific self-serving cognitive distortions. It should be noted that Frey and Epkins (2002) used a sample of incarcerated adolescents, resulting in less than an ideal comparison group for the present findings, as incarcerated youth tend to report significantly higher levels of self-debasing and self-serving cognitive distortions than community-based adolescents (Barriga et al., 2000). Despite the differences between the current study's participants and those of Frey and Epkins (2002), the current results indicated that incarcerated adolescents and community based adolescents categorized as co-occurring both endorsed assuming the worst and blaming others. The self-serving cognitive distortion of assuming the worst is very similar in content to the hostile attribution bias which has been strongly linked to antisocial behaviour (Gibbs, 2009). The fact that the current study's sample of community based adolescents categorized as co-occurring endorsed similar, and in fact more self-serving cognitive distortions than incarcerated participants categorized as co-occurring adds to the extant literature.

In the current study, both the externalizing and co-occurring adolescents reported higher levels of all four self-serving cognitive distortions compared to the adolescents in the internalizing and no problem categories. The effect size for the differences between categories ranged from medium to high. For example, the effect sizes for the differences

between the externalizing and internalizing category ranged from $d = .62$ to 1.11 , for the differences between the co-occurring and internalizing category the effect sizes ranged from $d = .71$ to $.85$. That the externalizing category reported significantly higher levels of specific self-serving distortions than the internalizing and no problem categories is to be expected based on both theoretical and empirical evidence (e.g., Barriga & Gibbs, 1996; Barriga et al., 2008). From a theoretical perspective, self-serving cognitive distortions are posited to protect an individual from self-blame or a negative self-concept, thus, serving to disinhibit aggressive and antisocial behaviour by neutralizing empathy or guilt (Barriga et al., 2000).

From an empirical perspective, a number of studies have provided strong support for the link between general and specific self-serving cognitive distortions, and externalizing problems (e.g., Barriga & Gibbs, 1996; Barriga et al., 2000; Barriga et al., 2008; Liao et al., 1998). Furthermore, the results reported in the current study indicating specificity of self-serving cognitive distortions to externalizing problems, would seem to bolster the hypothesized link between general self-serving cognitive distortions, and presumably the specific cognitive distortions to externalizing problems.

Specific Self-Debasing Cognitive Distortions and Problem Behaviours

Unlike studies examining differences between problem groups and specific self-serving cognitive distortions, which have been virtually nonexistent, studies examining specific self-debasing cognitive distortions in community samples have been, relatively, more common. For example, studies by Garnefski et al. (2005), Leung and Wong, (1998), and Epkins (2000) have all made significant contributions to the study of specific

cognitive distortions. The current study builds on this past research by including a community sample of adolescents from North America.

When analyzing the between category differences of specific self-debasing cognitive distortions (catastrophizing, personalizing, selective abstraction, overgeneralizing), the current study found that adolescents categorized as co-occurring had significantly higher levels of specific self-debasing cognitive distortions than adolescents in the externalizing, internalizing and no problem categories. The one exception being that overgeneralizing was not significantly different in either the co-occurring or internalizing adolescents. Particularly noteworthy is that the adolescents categorized as co-occurring had significantly higher levels for three of the four specific self-debasing cognitive distortions when compared to internalizing adolescents.

The current results are not completely supported by previous studies. Leung and Wong (1998) found that individuals identified as co-occurring and internalizing reported higher scores on all four specific self-debasing cognitive distortions (catastrophizing, personalizing, selective abstraction, overgeneralizing) than the externalizing and no problem category. These results only partially support the current studies' findings, in that the co-occurring category, in both this study and Leung and Wong (1998) had the highest levels of specific self-debasing distortions. The difference being that Leung and Wong, unlike the current study, found that the internalizing group along with the co-occurring group had the highest levels of specific self-debasing distortions.

Similar results to those of Leung and Wong (1998) were found by Epkins (2000) in her study which reported that both the internalizing and co-occurring groups had similar levels of all four specific self-debasing cognitive distortions, but higher than the

externalizing and no problem categories. In another study, Garnefski et al. (2005) reported that both personalizing and selective abstraction were highest in their co-occurring and the internalizing group, partially supporting Leung and Wong (1998), and the Epkins (2000) findings that both co-occurring and internalizing categories were similar in their endorsement of self-debasing cognitive distortions.

In sum, previous research indicates that internalizing adolescents tend to report higher levels of specific self-debasing cognitive distortions than externalizing adolescents, but not significantly different than co-occurring adolescents. That is, both internalizing and co-occurring adolescents endorsed similar levels of specific cognitive distortions, a finding not fully evident in the current study.

It is important to note that when comparing the results of Garnefski et al. (2005), Epkins (2000), and Leung and Wong (1998) to those of the current study, the differences in participants needs to be addressed. Although participants in Garnefski et al.'s (2005) and Leung and Wong's (1998) studies were from a community-based sample, participants in the Garnefski et al. study were Dutch, and participants in the Leung and Wong study were Chinese from Hong Kong. The current studies results therefore extend the findings reported among Chinese and Dutch adolescents, to a sample of Canadian adolescents.

Further difference between the aforementioned studies and the current study should also be noted. For example, in the Epkins (2000) study some of the participants were recruited from a clinical outpatient center, and participants from the community sample had a mean age of 10, considerably younger than the mean age of the present study ($M = 14.29$, $SD = 1.01$). As such, the current study differs from the previously cited

studies by having community-based participants from Canada, as well as having older participants than those reported in Epkins (2000).

With respect to Garnefski et al. (2005), the questionnaire (CERQ) used in their study was designed to measure emotion regulation strategies, which contained three strategies analogous to self-debasing cognitive distortions. For example, self-blame (cf. personalizing), rumination (cf. selective abstraction), and catastrophizing. As such their measure differed from the CNCEQ used in the current study, and Leung and Wong's (1998), as it was not designed to specifically measure self-debasing cognitive distortions across three important areas in a youth's life (athletic, academic, social), but their response after experiencing "threatening or stressful life events" (Garnefski et al., 2005, p. 623).

Beyond the demographic differences in participants, it would seem that the findings from the current study are not fully congruent with past research, in that the co-occurring adolescents in the current study seem to have the highest levels of self-debasing cognitive distortions, and that the externalizing adolescents do not significantly differ from the internalizing adolescents in their endorsement of self-debasing distortions. This discrepancy in results between the current study and previous studies warrants further discussion.

In previous studies, it has generally been shown that both the internalizing and co-occurring participants tended to have similar levels of self-debasing cognitive distortions, despite the diverse nature of participants across the studies (e.g., Epkins, 2000; Leung & Wong, 1998). Perhaps more to the point is that based on both theory and empirical evidence, it would be expected that the adolescents in the internalizing category would

report significantly higher levels of self-debasing cognitive distortions, including the four specific distortions, than those in the externalizing category (Barriga et al., 2000; Beck, 1967; Leitenberg et al., 1986; Leung & Wong, 1998).

The current results would suggest that the empirically supported specificity between specific self-debasing cognitive distortions and internalizing problems is not fully supported in the present study. Yet, this set of results are in sharp contrast to those reported in the analyses of research questions one and two of the present study, where specificity was strongly indicated between general self-debasing cognitive distortions and internalizing.

A possible explanation for adolescents categorized as co-occurring endorsing significantly more specific self-debasing cognitive distortions than internalizing adolescents may lie in the composition of the two categories. A closer examination of the co-occurring and internalizing categories reveal that 66% of the co-occurring category consisted of adolescents who were in the clinical range for internalizing in the YSR or TRF, whereas 46% of adolescents in the internalizing category were in the clinical range.

The substantially larger percentage of clinical level internalizing adolescents in the co-occurring category may explain why this category significantly endorsed more self-debasing cognitive distortions than the internalizing category, because there is some evidence to suggest that as the severity of internalizing increases so does the magnitude of self-debasing cognitive distortions (Leung & Wong, 1998). It should be noted that the differences between the clinical levels of internalizing, between the two categories, were found to be statistically significant.

Therefore, it can be hypothesized, that because the co-occurring category had significantly higher clinical levels (severity) of internalizing than the internalizing alone adolescents, they would, according to Leung and Wong (1998), be expected to have a higher magnitude of self-debasing cognitive distortions than the internalizing only category. Accordingly, the co-occurring adolescents, because of their presumably higher magnitude of self-debasing cognitive distortions might evince a significant difference when compared to the internalizing adolescents. An intriguing hypothesis that the current study was not designed to examine, as such, it awaits further study.

The significant differences in clinical levels of internalizing between the co-occurring and the internalizing categories may explain why the adolescents in the co-occurring category endorsed the specific self-debasing cognitive distortions significantly more than the other problem categories, but does not explain the nonsignificant differences between the externalizing and internalizing categories and the endorsements of three of the four self-debasing distortions.

A possible explanation for this discrepancy may lie in the fact that the previous analyses (research question one) of specificity used the total CNCEQ score, whereas this analysis used the four subscales; suggesting a potential problem with the factor structure of the CNCEQ. Accordingly, a previous study failed to support the four factor structure of the CNCEQ, instead supporting a one factor structure indicating a “negative cognitive set,” suggesting that the four specific self-debasing cognitive distortions may not be a reliable means of discriminating between the problem categories (Messer et al., 1994). Therefore, using the four subscales of the CNCEQ may have resulted in the nonsignificant difference between the internalizing, co-occurring, and externalizing

categories because the subscales may not have been discriminative enough to result in a significant difference from the externalizing or co-occurring category.

As such, the CNCEQ may have “lost” its specificity to internalizing problems when divided into its constituent subscales, thus the lack of significantly different endorsements of specific self-debasing distortions when compared to the externalizing and co-occurring categories. This lack of discriminative power did not include the distortion of overgeneralizing, which, in line with Messer et al. (1994) findings, was also found in the current results. Specifically, overgeneralizing was the one self-debasing cognitive distortion that was endorsed by the internalizing adolescents significantly more than the externalizing adolescents in the current study. Overgeneralizing was found to be a strong predictor of depression in children and adolescents (Weems et al., 2001), providing some support for this particular finding.

Although, Messer et al. (1994) would seem to provide an argument for the lack of discriminative power of the CNCEQ subscales, it is one study of psychiatrically hospitalized adolescents which has not been, to the author’s knowledge, replicated. Future research should examine the factor structure of the subscales of the CNCEQ in order to provide a better understanding of the discriminatory power of the four self-debasing cognitive distortions.

The current set of results, in conjunction with previous findings, strongly suggest the lack of consistent findings that would help indicate which specific self-serving and debasing cognitive distortions are more or less endorsed by adolescents with disparate demographic profiles and problem behaviours.

Co-occurring Category and Cognitive Distortions

What the current study has been able to accomplish is to broaden the existing literature by using a community sample of North American adolescents, as well as, add to the limited research by addressing the question of the specificity of specific cognitive distortions to differing problem categories. Furthermore, it is clear, from the literature and the majority of results from the current study, that co-occurring adolescents tend to endorse both self-debasing and self-serving specific cognitive distortions similarly to externalizing or internalizing adolescents. A possible explanation for this result may lie in the findings that co-occurring problems are distinct from internalizing and externalizing problems but do potentially overlap in their cognitive distortions (Barriga et al., 2000; Quiggle et al., 1992).

In the current study the creation of the co-occurring category was based on *T* scores from the internalizing and externalizing scales. Specifically, if participants had *T* scores of 60 or more, on both internalizing and externalizing, they were classified as co-occurring. The *T* score of 60 was the cutoff between borderline clinical and non-clinical. In practice, adolescents in the co-occurring category had at least borderline levels of internalizing or externalizing and some may have had clinical levels of each or both.

Given that self-debasing and self-serving cognitive distortions have been shown to significantly differentiate internalizing and externalizing adolescents, respectively (e.g., Barriga et al., 2000), and that the results of the current study have also shown a significant association between these distortions and problem behaviours, it would stand to reason that co-occurring adolescents would retain their self-serving and debasing cognitive distortions. In other words, the strategy of combining internalizing and

externalizing adolescents, who met specific criteria, into the co-occurring category would not necessarily negate the fact that these adolescents retained their specific self-serving and self-debasing cognitive distortions (e.g., Barriga et al., 2000). In fact, co-occurrence has been shown to increase the likelihood of committing cognitive errors, have more dysfunctional cognitions, and exhibit similar cognitive patterns of internalizing and externalizing only youth, but in additive fashion (Epkins, 1996; Kempton et al., 1994; Quiggle et al., 1992). Furthermore, Leung and Wong (1998) found the severity of internalizing problems increase as the magnitude of self-debasing cognitive distortions increase, which, as discussed previously in this section, provide a potential explanation for the significant difference between the co-occurring and internalizing adolescents' endorsements of specific cognitive distortions.

In sum, the co-occurring category in the current study was an amalgam of internalizing and externalizing adolescents and, by extension, their cognitive distortions. To clarify, both internalizing and externalizing adolescents have been shown to exhibit specificity between self-serving and self-debasing cognitive distortions and externalizing, internalizing problems, respectively (Barriga et al., 2000). Therefore when examining adolescents with both internalizing and externalizing problems (i.e., co-occurring) it can be argued that the adolescents will endorse both self-serving and self-debasing cognitive distortions. Support exists for the exacerbation of faulty cognitions, over and above that expected from the individual problems that are constituent in the co-occurring problem (e.g., Quiggle et al., 1992). The co-occurring category would be hypothesized to have similar self-debasing or self-serving cognitive distortions to that of the internalizing and externalizing categories, as such, the possibility exists that these distortions are additive

(e.g., Quiggle et al., 1992). Although intriguing, it should be noted that this explanation is based on limited research, as such, it remains to be supported by future research.

This set of current results has extended the work of previous research by further examining the difference between problem categories and specific self-debasing and self-serving cognitive distortions in a community sample of adolescents. What the results of previous studies and the current study have provided are an examination of difference between categories, specifically how do participant's specific self-serving or self-debasing cognitive distortions differ between the problem categories of externalizing, internalizing, co-occurring and no problem.

By identifying the differences between which specific self-debasing and self-serving cognitive distortions, adolescents categorized as externalizing, internalizing, or co-occurring endorse, highlights the fact that adolescents' specific cognitive distortions are more prevalent in some problem behaviours than others. What may be as important to learn, from an intervention or prevention perspective, is what specific cognitive distortions are endorsed the most *within* a specific problem category. To date, this question has not been addressed in the extant studies, as such, the current study is the first to examine which specific cognitive distortions are endorsed within separate problem categories. The results of these analyses are presented next.

Specific Cognitive Distortions and Within Problem Category Differences

With respect to specific self-serving cognitive distortions and the externalizing category, the results indicated that adolescents in this category tended to endorse, from highest to lowest, minimizing/mislabeling, self-centered, blaming others, and assuming the worst. Within the internalizing category, blaming others was the highest followed by

minimizing/mislabeling, and assuming the worst. Finally, in the no problem category, assuming the worst was the least used distortion and the self-centered, blaming others, or minimizing/mislabeling were all found to be equally utilized.

When examining the endorsement of self-debasing cognitive distortions, the externalizing adolescents endorsed selective abstraction the most, followed by personalizing and overgeneralizing. For the internalizing adolescents, overgeneralizing was the most endorsed distortion followed by selective abstraction, personalizing and catastrophizing; none of these three distortions were significantly different from each other. Finally in the no problem category, selective abstraction was used more than overgeneralizing and catastrophizing, but not the personalizing self-debasing cognitive distortion.

First, it should be noted that none of the differences between cognitive distortions evinced larger than small effect sizes. But considered together, these results would suggest that the participants in this current study clearly endorsed certain specific self-debasing or serving cognitive distortions more than others, depending on which problem category the adolescent belonged to. The current study was not designed to answer “why” certain cognitive distortions are endorsed over another, but a possible hypothesis might be linked to past experiences and effectiveness.

The endorsement, by the participants, of one cognitive distortion over another would suggest that the participants had distinct “preferences” for specific cognitive distortions. It may be that the choice of cognitive distortions is based on participants’ schemas, which are stable memory structures which affect how individuals encode, understand and retrieve information (Beck, 1967). Perhaps more relevant, are self-

schemas which, like schemas, help organize information and make the interpretation of the information more efficient (Clark et al., 1999).

Self-schemas have also been theorized to produce cognitive errors in information processing models of depression, anxiety, and aggression (Beck, 1967; Crick & Dodge, 1994). Therefore, the current results suggesting that certain specific cognitive distortions are “preferred” over others might indicate that the distortion endorsed most might be the most effective in the case of self-serving distortions, or the most salient in memory because of past negative experiences in the case of self-debasing distortions (Marcotte, Lévesque, & Fortin, 2006).

A modicum of support, for this explanation, was found by Barriga et al. (2008) who found that self-serving cognitive distortions were not generally applied to all problematic behaviour, but that distinct distortions were associated with distinct forms of aggressive behaviour. Marcotte et al. (2006) concluded that depending on depressive symptoms, certain distortions might be more prevalent than others, while others being more stable. Neither of these studies reported specific cognitive distortions, but taken together lend support to the argument that not all cognitive distortions are utilized equally.

The previous research question was analyzed using MANOVA to compare mean differences, as such, all eight of the specific cognitive distortions were analyzed. Accordingly, means from all eight distortions were part of the final output, whether or not they were significant. This methodology tells us that there are differences between variables but does not indicate which is the most important variable, nor does it take into account potentially confounding variables.

In an effort to disentangle which specific self-serving or debasing was the most important relative predictor of internalizing or externalizing, hierarchical regression analyses were used. The RPI was utilized to measure relative importance of each predictor variable, allowing for an intuitive comparison between variables. Furthermore, the entry of potentially confounding variables into the regression analyses provided a clear and parsimonious indication of which specific cognitive distortion most predicted internalizing or externalizing.

*Relative Importance of Specific Self-Serving and Debasing Distortions to
Psychopathology*

Further analyses on the association between specific cognitive distortions and problem behaviours was examined using hierarchical multiple regression. This analytic strategy, in combination with RPI analyses, was used to determine which specific self-serving cognitive distortions were the most important relative predictors of externalizing problems and which specific self-debasing cognitive distortions were the most important relative predictors of internalizing problems.

Relative Importance of Specific Self-Serving Distortions

With respect to self-serving cognitive distortions, the results indicated that inclusion of the specific self-serving cognitive distortions (self-centered, blaming others, minimizing/mislabeling, assuming the worst) in the model explained an additional 26% of the variance in externalizing behaviour over and above the variance explained by age, gender, and internalizing. When only the significant predictors were entered in the final model, it was found that assuming the worst was the most important cognitive distortion predictor, relative to the other variables in the model, of externalizing problems, followed

by minimizing/mislabeling, and self-centered. Particularly noteworthy is that the final model, which also included internalizing problems, accounted for 50% of the variance in externalizing problems.

When looking at the unique contribution to the variance, assuming the worst accounted for 29%, minimizing/mislabeling 26%, and self-centered 17%, with internalizing accounting for 27%. That internalizing accounted for a relatively large percentage of the variance is not unexpected given the typically high correlation rates between internalizing and externalizing found in the literature (Achenbach & Rescorla, 2001) and those found in the current study ($r = .48$). What is unique about these findings is that we now have a quantitative indication of how important, or unimportant in the case of blaming others, each specific cognitive distortion is to the prediction of externalizing behaviours, relative to the other variables in the model, in the present sample of community adolescents.

Relative Importance of Specific Self-Debasing Distortions

With respect to the self-debasing cognitive distortions, the addition of specific self-debasing cognitive distortions (catastrophizing, personalizing, selective abstraction, overgeneralizing) explained an additional 18% of variance, over and above the variance explained by age, gender, and externalizing. When examining only the significant predictors of internalizing behaviour in the final model, 40% of the variance was explained by externalizing, overgeneralizing and catastrophizing. Of the 40% variance, overgeneralizing and catastrophizing explained 32% and 26% respectively.

It should be noted that externalizing was the most important predictor, relative to the other variables in the model, of internalizing behaviour, accounting for 42% of the

total variance. Beyond the expected co-occurrence between internalizing and externalizing, that the fact that externalizing was the strongest predictor of internalizing would seem to contradict some previous findings. For example, Beyers and Loeber (2003) found that depressed mood in males predicted delinquent acts and vice versa, but depressed mood was a stronger predictor of delinquent behaviour. Conversely, Wolff and Ollendick (2006) concluded that, based on a review of the literature, that conduct problems precede depressive mood. Despite their conclusion, Wolff and Ollendick enumerated various methodological and theoretical limitations of the extant literature rendering conclusions equivocal.

A potentially more viable explanation for this current result may be found in the early work of Capaldi (1992) and the more recent work of Beyers and Loeber (2003), who posited that a child's antisocial behaviours may lead to increased depression because of the social consequences of their behaviour, and in turn lead to association with other delinquent peers, and thus continuing the cycle. Furthermore, it has been suggested that this pattern may be specific to early adolescence (Beyers & Loeber, 2003). Lending support to this argument would be the fact that the mean age of participants in the current study was 14 years, which may be considered early adolescence.

Further evidence of externalizing problems affecting depression can be found in treatment studies which indicated that externalizing adversely affected the remission and recovery from depression, indicating the negative influence of externalizing problems on depression (Rohde, Clarke, Lewinsohn, Seeley, & Kaufman, 2001). Finally, it should be noted that self-debasing cognitive distortions were still relatively more important in predicting internalizing problems combining to account for almost 60% of the variance as

compared to 42% for externalizing problems. The explanations put forth are hypothetical as the current study was not designed to measure the longitudinal pathways or the socio-emotional consequences of the current participants externalizing and internalizing problems.

The literature provides little or no information about the relative differences between specific cognitive distortions of whether they are able to uniquely predict internalizing or externalizing problems. Specifically, no published studies have reported which specific self-serving cognitive distortions are more or less likely to predict externalizing problems. As such, the findings from the current study that assuming the worst was the most important predictor, relative to the other variables in the model, of externalizing problems, followed by minimizing/mislabeling and self-centered, would be a novel contribution to the extant literature.

With respect to self-debasing cognitive distortions, three studies have reported disparate results regarding the differences between specific cognitive distortions in predicting internalizing problems. Leung and Wong (1998), based on β values, found that overgeneralizing was the strongest predictor of internalizing, followed by catastrophizing and personalizing which had equal β values. Weems et al. (2001) also found that overgeneralizing was the strongest predictor of depression, followed by selective abstraction. Finally, Garnefski et al. (2005) reported that selective abstraction followed by personalizing were the strongest predictors of internalizing problems.

It would seem that when taking into account the results from two of the three studies cited (Leung & Wong, 1998; Weems et al., 2001), and those of the current study, that the specific self-debasing cognitive distortions of overgeneralizing and

catastrophizing tend to predict internalizing problems the most in the current sample. Despite the general consensus, between the current study and those cited above, methodological issues may make generalization difficult. For example, both Garnefski et al. (2005) and Leung and Wong, used community samples from, respectively, the Netherlands and Hong Kong. The Weems et al. (2001) sample was from the United States, but drawn from a clinical sample. The current study controlled for the potentially confounding variables of age and gender, as did Garnefski et al. (2005), whereas Leung and Wong (1998) did not, raising the question of whether their regression results were confounded by age and gender effects.

Given the demographic and methodological differences between the current study and those cited, the current results have added to the extant literature by expanding both the scope of participants to a North American community sample, and providing novel information regarding this area of research by examining not only between problem category differences but within category differences. The next section will highlight and discuss the significant results obtained when using teacher-reported internalizing and externalizing problems.

Teacher-Reported Internalizing and Externalizing Problems

The TRF was used in the current study, in conjunction with the YSR, to provide a more valid selection of participants for the internalizing, externalizing, co-occurring, and no problem categories. A strategy commonly recommended by researchers (e.g., Achenbach, 2006), but rarely followed in the cognitive distortions literature, with two notable exceptions (Barriga et al., 2001; Frey & Epkins, 2002), which used the CBCL and the YSR. The TRF, to the author's knowledge, has yet to be used in conjunction with

self-reports in the empirical examination of cognitive distortions and internalizing or externalizing problems. This section will discuss the results of the analyses when using the teacher-reported internalizing and externalizing as dependent variables.

The analyses yielded results both consistent and inconsistent with the extant literature. However, it should be noted that because there is a paucity of research employing the TRF to examine cognitive distortions and problem behaviours, the findings in the literature are based predominantly on self-reports, as such, comparing the current results using the TRF to research findings based on the YSR may be problematic.

The fact, that the TRF and YSR have typically shown a low correlation (Achenbach & Rescorla, 2001), and the results from the current study also indicated a low correlation between the YSR and TRF externalizing scale, and a nonsignificant correlation between TRF and YSR internalizing scales, would seem to bolster the argument. Although it can be argued that the lack of association, between the TRF and YSR, is an indication of cross-informant discrepancies where youth tend to self-report higher rates of internalizing than teachers, and teachers tend to report more externalizing behaviours than youth self-report (Achenbach et al., 1987; Youngstrom et al., 2000).

Specificity of Self-Serving Cognitive Distortions to TRF Externalizing

A finding from the current study consistent with the extant research was the specificity of self-serving cognitive distortions to externalizing behaviour (Barriga et al., 2000). Specifically, self-serving cognitive distortions were found to be significant predictors of teacher-reported externalizing problems and self-debasing cognitive distortions were not significant predictors. Yet, when measuring the relative importance of the predictor variables, self-serving cognitive distortions were found to be unimportant

predictors, relative to the other variables in the model, of externalizing problems.

Furthermore, no significant associations were found between self-serving cognitive distortions and externalizing, or self-debasing cognitive distortions and internalizing problems.

This set of results strongly indicates that the adolescents' cognitive distortions were not specific to teacher-reported internalizing or externalizing problems. Particularly noteworthy are the results that showed externalizing was the only important predictor, relative to the other variables in the model, of internalizing behaviour and vice versa in the current sample of adolescents. Similar results were found when examining specific self-debasing and self-serving cognitive distortions; externalizing was the most important predictor, relative to the other variables in the model, of internalizing. Internalizing was the most important predictor, relative to the other variables in the model, of externalizing problems. The specific cognitive distortions showed no significant associations to teacher-reported internalizing or externalizing problems.

Taken together, these results would strongly suggest that cognitive distortions are not associated or predict teacher-reported internalizing and externalizing problems. A plausible explanation may be found in the sources of information used in the current study. That is, cognitive distortions, both general and specific, were measured using participants' self-reports, internalizing and externalizing measures were either teacher-reported or self-reported.

When measuring self-reported problems and cognitive distortions, the source of information is the participants. When measuring the link between teacher-reported problems and self-reported cognitions, two sources of information are used. Only one of

which, the adolescent, is able to answer questions regarding their cognition. It would seem that trying to examine participants' cognition as they relate to their internalizing and externalizing, based on a teacher's assessment of the participants' internalizing and externalizing problems, would result in neither reliable nor valid findings.

In fact, two studies cited in the current study, that utilized multiple informants (YSR & CBCL), either combined these two measures to produce a composite problem score (Barriga et al., 2001), or used the informant assessment to create specific problem groups (Frey & Epkins, 2002). Neither study analyzed participants' cognitive distortions with teacher-reported internalizing or externalizing problems. It may be that when examining cognitive constructs, self-report cognitive measures should be compared to self-report measures of internalizing or externalizing, or a combinatorial or other selection strategy used to gather information from multiple informants, thus providing one composite score.

Age Differences in Teacher-Reported Problems

Early adolescents differed significantly from middle adolescents on their levels of teacher-reported internalizing and externalizing problems. Specifically, early adolescents reported higher levels of internalizing and externalizing than middle-adolescents. These results are consistent with normative data which found that teachers reported higher levels of internalizing and externalizing problems in a large sample of non-referred early adolescents when compared to middle-adolescents (Achenbach & Rescorla, 2001). Furthermore, these results also support longitudinal and cross-sectional studies that indicated that depressive, anxiety, and conduct disorders typically begin increasing from early- to middle-adolescence (Costello et al., 2003; Zahn-Waxler et al., 2006).

This set of results would seem to indicate that the teachers were aware of the participant's internalizing problems, which are typically not as obvious as externalizing problems. This may indicate the teacher's familiarity with students. The majority of the grade eight participants (67%) in the current sample were recruited from middle schools, which encompass grades 6 to 8, as such, the teachers may have had previous experience, or information about the participating students that grade ten teachers may not have had, resulting in the significant difference between the early and middle-adolescents.

An alternative explanation may be that teachers based their ratings of students on how they compared with other peers. The use of this strategy among teachers has been reported in the literature (Kamphaus & Frick, 2002). Therefore, based on the findings that the majority of participants in the current study did not evince high levels of teacher-reported problems, it can be hypothesized that participants that did have high levels of internalizing or externalizing might be more salient to the teachers doing the rating because they differed from the majority of their other classmates.

The pattern of results from the TRF analyses would suggest that the majority of the adolescents did not have high levels of internalizing or externalizing problems, which is what would be expected (Achenbach & Rescorla, 2001). Very few significant differences or associations were found when analyzing the data using teacher-reported internalizing and externalizing. In sharp contrast to the results from the YSR analyses.

Some possible explanations for this may be that internalizing and externalizing youth did not actually differ, and the differences found in the self-reported problems may have been the result of shared method variance. This would seem improbable given the set of results from the regression analyses of self-reported internalizing and externalizing,

which indicated significant and specific associations to cognitive distortions when controlling for externalizing or internalizing, respectively. And the specificity of self-serving cognitive distortions to externalizing were found to be significant when using teacher or self-reported externalizing as the dependent variable, arguing against shared method variance. A more likely explanation is that the teachers were not aware of the extent or range of internalizing or externalizing problems in their students, an example of the cross informant discrepancy often cited in the literature (e.g., De los Reyes & Kazdin, 2005).

From a statistical perspective, because the majority of participants were rated by the teachers as having low levels of internalizing and externalizing, there is the possibility that the skewness of the data resulted in a lack of variance between data points, which in turn may have resulted in few significant differences or associations when compared to the analyses of self-reported internalizing and externalizing problems. Furthermore, the differences between the YSR and TRF may have also been attributable to sample size. In the current study, teachers completed 294 TRFs while 387 participants completed the YSR. A substantial difference, which, using the TRF, may have reduced the power of the statistical tests to detect significant differences relative to the analyses using the YSR.

Taken together, the results, when using teacher-reported internalizing and externalizing do not seem to provide the depth or breadth of information provided by self-reported problems. As discussed, there are various reasons for the difference, but it would seem that the TRF may not be as informative in the current study as the YSR when examining student internalizing, externalizing problems in conjunction with cognitive distortions. Nevertheless, the TRF provides another unique source of participant

information, as such, should be an integral part of the selection criteria for problem groups, as was done in the current study. The next section will outline the implications and the novel contributions to the literature of the current study as they relate to prevention or the treatment of internalizing and externalizing problems.

Summary of the Current Study's Findings

When taken together, the results of the current study present an intriguing profile of the participating community-based adolescent. This study expanded on the prior work of Barriga and colleagues (2000, 2008), Frey and Epkins (2002), Leung and Wong (1998), and some of the current results have uniquely contributed to the area of cognitive distortions and internalizing, externalizing problems. For example, in the current study, the magnitude of the positive associations between cognitive distortions and self-reported internalizing, externalizing problems strongly indicated that self-serving cognitive distortions were specific to externalizing problems, and self-debasing cognitive distortion were specific to internalizing problems. This specificity is evident in both early- and middle-adolescent males and females. These sets of results are unique in that significant age differences have not been previously reported in the extant literature.

Although males and females both evinced strong significant associations between their self-serving and self-debasing cognitive distortions and self-reported internalizing, externalizing problems, further analysis indicated that females did not have significantly different specificity when examining internalizing problems. These results would suggest that female participants' self-serving cognitive distortions were specific to externalizing problems, but self-serving and self-debasing cognitive distortions were both specific to internalizing problems.

Further results, bolstered the specificity hypotheses, as both self-serving and self-debasing cognitive distortions were significant and important predictors of externalizing and internalizing problems, respectively. In fact, self-serving cognitive distortions predicted 74% of the variance in adolescent self-reported externalizing problems, and self-debasing cognitive distortions predicted 62% of the variance in adolescent self-reported internalizing problems. What may be concluded from this set of results would be that knowing which general cognitive distortion is most endorsed by an adolescent may indicate which type of problem behaviours the adolescent is more likely to self-report.

The previous results provide information about general cognitive distortions specificity to self-reported internalizing and externalizing problems, additional analyses were undertaken to examine which specific cognitive distortions the adolescents in the current sample endorsed, within and between specific problem categories. Based on the results, it seems that adolescents categorized as co-occurring tended to endorse both specific self-serving and self-debasing cognitive distortions as much as adolescents classified as externalizing, or more so, when compared to internalizing adolescents.

Therefore, the specificity that would be expected from self-serving cognitive distortions to externalizing problems was particularly evident in the co-occurring adolescents. Perhaps more intriguing, is the fact that adolescents categorized as co-occurring endorsed specific self-debasing cognitive distortions more than the internalizing adolescents, potentially indicating that specific self-debasing cognitive distortions might be more prominent in co-occurring than in internalizing participants.

What becomes quite evident, when looking at the results of the current study in conjunction with the extant research, is that there are no consistent findings regarding which specific self-debasing or serving cognitive distortions, internalizing, externalizing, or co-occurring adolescents tend to endorse. Whether the lack of consistency is based on the limited amount of studies or, more likely, interpersonal cognitive differences remains to be examined in future studies.

A novel contribution of the current study was to measure within problem category endorsement of specific self-serving and self-debasing cognitive distortions. The externalizing adolescents participating in the current study endorsed the self-serving distortion of minimizing/mislabeling the most, indicating that these adolescents tend to downplay the consequences or responsibility for their externalizing problems. Whereas, internalizing adolescents placed the blame or responsibility for their externalizing problems on others or the situation, as indicated by their high endorsement of blaming others. With respect to self-debasing cognitive distortions, the externalizing adolescents endorsed selective abstraction more than the other specific cognitive distortions, indicating a tendency to focus on only the negative aspects of a particular situation. The internalizing adolescents endorsed overgeneralizing the most, which would indicate that these adolescents tend to see a single negative outcome as indicative of all situations.

Once again, this set of results provide a strong indication of which cognitive distortions the participants in the study are endorsing, but does not provide an answer as to why they endorse one particular distortion over another. As hypothesized previously in this study, a potential explanation for these results could be linked to “preference” or effectiveness of certain cognitive distortions. The current study was cross-sectional, as

such, information is gathered at a certain point in time, and it could be argued that the participant endorsed specific cognitive distortions because those were the ones that were most salient, because they have been the most adaptive, or maladaptive in the case of self-debasing cognitive distortions. Therefore, it could be posited that whichever specific self-debasing or self-serving cognitive distortions were endorsed the most may have been an indication of which were “used” the most, and thus salient, by the adolescents in the current sample.

Another novel contribution of the current study to the literature was the examination of the relative importance of the specific self-serving cognitive distortions in predicting externalizing problems. Assuming the worst, followed by minimizing/mislabeling, and self-centered, were found to be the most important predictors, relative to the other variables in the model, of externalizing problems in the current sample. With respect to internalizing problems, overgeneralizing, and catastrophizing were the most important predictors relative to the other variables in the model. The specific cognitive distortions were ordered by relative importance using the RPI, a novel statistical approach in this area of the literature, which provided an intuitive measure of the relative importance of each specific cognitive distortion. No published study has reported which specific self-serving cognitive distortions more or less predict externalizing problems. Such information, along with the other findings of this study, hold the potential to help identify risk or vulnerability factors associated with internalizing and externalizing problems, which in turn can inform prevention or intervention programs.

Comparison between these results and those found previously in the current study for the problem categories are difficult to make, as the broad band self-reported internalizing and externalizing problems are not analogous to the internalizing or externalizing problem categories. The broad band self-reported internalizing and externalizing problems are an amalgam of all the participants, not yet categorized into the problem categories. It can be argued that the specific cognitive distortions shown to be the most important predictors, relative to the other variables in the model, of self-reported internalizing and externalizing problems might be a clearer and more accurate representation of what specific cognitive distortions the adolescents in this study were endorsing. The reason being that the potentially confounding variables of gender, age, and self-reported internalizing or externalizing problems were controlled for in the analyses and the outcome variable was not a linear combination of two or more dependent variables as in the case of the MANOVA analyses.

In sum, the results from the current study have shown a strong and clear link between the cognitive distortions self-reported by the community-based adolescents in the current study, and self-reported internalizing and externalizing problems. This study has furthered, and in some cases, uniquely highlighted the association between specific cognitive distortions and both broad band self-reported internalizing, externalizing problems and specific problem categories, the most prominent of which was the co-occurring category.

Implications

The study of community-based male and female adolescents' cognitive distortions and their relationship with internalizing and externalizing problems has, to date, received

very little empirical attention. The current study added to the limited research by empirically examining Canadian adolescents and their self and teacher-reported cognitive distortions, and internalizing, externalizing problems.

Implications for Intervention and Prevention

This set of unique results, in conjunction with the current findings, previously supported in the extant literature, can inform intervention and prevention programs. According to reviews by Maddux and Winstead (2008), and Waddell, Hua, Godderis, and McEwan (2004), cognitive-behavioural therapy (CBT) has been shown to be one of the most efficacious psychological treatments, and basis of prevention programs for internalizing and externalizing problems. One of the primary components of CBT is cognitive restructuring, which focuses on identifying and challenging cognitive distortions (Whisman, 2008).

The current study has examined eight specific self-serving and debasing cognitive distortions with a theoretical and empirical link to internalizing and externalizing problems, and found some unique results that may be incorporated into CBT intervention or prevention models. Specifically, early to middle male and female adolescents' self-serving and debasing cognitive distortions were found to be strongly associated with internalizing and externalizing problems. This suggests that identifying whether an adolescent is internalizing or externalizing may provide information on whether their distortions are self-serving or self-debasing. Furthermore, the results also indicated which specific distortions were likely to predict internalizing or externalizing problems. Thus, providing a general indication of which distortion or distortions may need to be addressed in intervention settings.

Perhaps more important is the finding that specific cognitive distortions were differentially endorsed depending on whether the adolescent was categorized as either internalizing, externalizing, or co-occurring. The results of this study suggest that these adolescents differ in which self-serving and debasing cognitive distortions they tend to use. In fact, even within these categories there seems to be differences in which specific cognitive distortion is endorsed the most by the adolescent. Accordingly, any intervention has to first identify which specific cognitive distortion is endorsed, then focus on dealing with the distortion or distortions unique to that individual.

Past research has indicated that internalizing and externalizing problems tend to co-occur (Achenbach & Rescorla, 2001), a finding consistent with the current results. In particular, the results of the current study indicated that co-occurring adolescents tended to endorse as high or higher levels of specific cognitive distortions than the internalizing or externalizing category. As such, a concerted effort must be made to identify whether an individual has co-occurring problems, because they may be utilizing both self-serving and self-debasing cognitive distortions. For example, adolescents exhibiting externalizing problems are more likely to be referred to mental health workers, in part because the behaviours are more visible (Deković et al., 2004; Henggeler & Sheidow, 2003), if it is the school counsellor that is assessing the individual, it is important that the possibility of co-occurring internalizing and externalizing problems be explored. Neglecting to do this may potentially affect treatment as some of the cognitive distortions may not be addressed adequately. The next sections will highlight the primary strengths and limitations of the current study, and end with suggestions for future research.

Strengths of the Current Study

The current study has a number of strengths. First is the use of a large community-based sample of adolescents, which fills a gap in the extant literature by providing generalizable results to a broader population base than referred and incarcerated youth. Second, the inclusion of males and females in the examination of cognitive distortions, and externalizing, internalizing problems is an important addition to the extant literature. The examination of gender effects provides a more generalizable set of findings and differs from many of the previous studies that only included males; thus providing further, in some cases new, information on gender similarities and differences with respect to the association of cognitive distortions to internalizing and externalizing problems.

Third, this study addressed the differences in cognitive distortions between and within specific problem categories, providing a more detailed examination of how adolescents categorized as externalizing, internalizing or co-occurring differ in their endorsements of specific cognitive distortions, but also how, within each problem category, specific cognitive distortions were differentially endorsed. Fourth, the use of the TRF in conjunction with the YSR to categorize youth into problem categories provided potentially more valid categories and diminished the effects of shared method variance. Finally, the use of the RPI was a novel means of assessing the relative importance of predictor variables. The ease of computation and intuitive nature of the RPI may be a useful statistical tool in future studies.

Limitations of the Current Study

The current study had some methodological limitations that will be outlined in this section. This study was a cross-sectional examination of adolescents' cognitive distortions, providing information of an individual's cognitive distortions at a specific period in time, and based on scenarios or questions designed to measure the individual's cognitive distortions. As such, these distortions were not able to be measured as they actually occurred. Consequently, the participants' responses for the HIT and CNCEQ were used to infer what a participant's cognitive distortions would be in cases of actual internalizing and externalizing problems; potentially resulting in the diminished ecological validity of the current findings.

Another limitation of the current study was the operational definition of co-occurrence. In the current study, specific scoring criteria, based on two empirically derived constructs: internalizing and externalizing, were used to categorize a participant as co-occurring or not. The category of co-occurrence was not a clinical diagnosis, as such, whether an individual participant was clinically co-occurring, or the result of the categorization criteria is not known. As such the results of the current study may not generalize to adolescents clinically diagnosed as having co-occurring internalizing and externalizing problems.

The HIT and CNCEQ were used to measure self-serving and self-debasing cognitive distortions in the current study. Each of these questionnaires measured four specific cognitive distortions, thus limiting the participants to only those choices, potentially overlooking other known cognitive distortions. For example, there are seven self-debasing cognitive distortions identified in Beck's cognitive model (Clark et al.,

1999), only four of which are measured in the CNCEQ. Therefore, the use of the CNCEQ may have artificially truncated participants' choice of self-debasing cognitive distortions, potentially resulting in other self-debasing cognitive distortions not being examined.

A further issue that may be a limitation of the current study is the use of the CNCEQ to measure adolescent self-debasing distortions. Beck's research into depression was initially motivated by the validation of Freud's theory of depression (Beck & Weishaar, 1995). Beck, using clinical observations of his adult patients, found that they expressed negative cognitive biases. As such, Beck's cognitive biases, which are the basis of the CNCEQ, were derived from adult and not adolescent patients. Despite the fact that the CNCEQ was developed to measure self-debasing cognitive distortions in children and adolescents, it still requires further validation in order to ascertain its theoretical and psychometric properties with respect to adolescents' self-debasing distortions.

With respect to the TRF, two issues may have affected its validity. First, the TRF was distributed to teachers at the beginning of November, and the beginning of the school year was September. Presumably, 2 months was the amount of time that the teacher had been teaching the participants in the study. According to Achenbach and Rescorla (2001), 2 months is the minimum period that a teacher should be familiar with a student in order to complete the TRF.

Therefore, it is plausible that the teacher did not have the opportunity to become familiar enough with their students to provide a valid assessment of their problem behaviours. As such, future research might want to target later dates for the administration of the TRF, increasing the probability that the teacher has a better

familiarity with their students. Second, teacher completion of the TRF, in the current study, varied from school to school, and between different classrooms. Consequently, one teacher may have been responsible for completing 15 TRFs and another for 60. With such a discrepancy, it is possible that the teachers completing larger amounts of TRFs may not have been as diligent in their assessments as those with fewer TRFs because of time constraints.

The response rate for the completion of the TRFs was relatively low compared to the YSR, 76% and 99% respectively. Teachers were given a week to complete TRFs not completed during the administration of the YSR to their students, but some chose not to participate beyond the class time. Furthermore, three teachers were absent during the administration of the questionnaires to their classes. These three teachers were not interested in completing the TRFs when they returned to work. A likely reason may have been the time commitment needed to complete a TRF for each of their students participating in the study. Mitigating the response rate of teachers was the fact that absentee teachers were from three different schools and taught grades eight and ten, and 15 of the 19 participating teachers had at least one incomplete TRF. This information would suggest that lack of response was not isolated to one school or grade, thus interspersed across the whole sample of participants. An examination of the scores from the TRF indicated a restricted range of scores, when compared to the YSR (see Appendices I & J). A large percentage of scores were at the low end of the TRF internalizing and externalizing scales, indicating a potential floor effect (Lewis-Beck, Bryman, & Liao, 2004). When a large number of participants score on the lower end of a scale the range of scores may be restricted.

Restricted range of scores may have decreased the correlation coefficients because of the decreased amount of variance and increased the chance of a Type II error. That is, rejecting the null hypothesis when in fact it may be true (Lewis-Beck et al., 2004), which may explain the lack of significant correlations between teachers reported internalizing and externalizing and self-debasing and self-serving cognitive distortions.

It should also be noted that when the TRF means from the current study were compared to normative data, using independent *t*-tests, the current mean scores were significantly lower than the TRF normative sample for both males and females (see Appendix L). More revealing, was the fact that youth-reported internalizing and externalizing problems, for both males and females, were significantly higher than reported by the teachers (see Appendix M). This set of results suggests that teachers, in the current study, were not aware of their students internalizing and externalizing problems. Such a result would call into question the teachers' ability to identify or recognize internalizing or externalizing problems within their classroom. Mitigating this conclusion is the fact that teachers may not have had enough time to be well acquainted with their students, given that the TRFs were completed at the beginning of the school year.

Based on time and financial constraints, this study used two sources of information (YSR & TRF) in order to categorize participants into specific problem categories. The addition of parental or caregiver information (CBCL) regarding the participant may have provided greater validity to the categories by making the categorization criteria more stringent. For example, categorizing participants into specific

problem categories based on two out of the three informants agreeing on problem behaviour.

Some students were absent or were not given permission to participate in this study. The reasons for the lack of permission or absenteeism were not obtained for the present study. Thus it is difficult to establish whether the non-participating adolescents may have affected the results. For example, parents may have avoided providing permission to adolescents who were exhibiting problem behaviours, or some of the adolescents may have been truant on the day the questionnaires were completed. Regardless, this is a matter of conjecture, and future researchers might want to explore the reasons for absenteeism and examine whether they are justified or not. Researchers may also want to provide care givers with an option to explain why they do not want the youth to participate in a particular study. This information may provide a better understanding of non-participation that can be integrated into the studies final results.

A further set of limitations of the current study was first the lack of specific SES information for the participants. SES information was obtained using census data for each of the school districts involved in the study, although not as precise as individual SES data; the census data provided an overview of the participants' families' median income. Finally, each participant was given the questionnaires in the same order, potentially introducing an order effect that may have influenced the validity of the participants' responses on the last questionnaires due, for example, to fatigue (Groves, 2004).

Future Research

Future research needs to address the issue of cognitive distortions across time. Do distortions change from one age period to another? Specifically, is there a change in

which specific cognitive distortions are utilized more than others as participants grow older? Do individuals have a “preference” of which specific cognitive distortions are used? If so how does this preference develop? Is it based on effectiveness, or cognitive changes? A limitation of the present study was that participants’ cognitive distortions were measured at a specific period based on questionnaire items. In order to gain a potentially more valid indication of an individual’s cognitive distortions they may need to be measured across time and in “real time.” In order to do this a methodology would need to be used that incorporated situations that were more authentic than written vignettes or questions, such as visual representations of distortion inducing behaviours (e.g., Dodge, Lochman, Harnish, Bates, & Pettit, 1997).

There is also a need for more in depth research focusing on the cognitive distortions of adolescents who have co-occurring internalizing and externalizing. Do these individuals’ self-serving and self-debasing cognitive distortions qualitatively differ than those of internalizing or externalizing adolescents, and do the distortions interact or remain specific to internalizing or externalizing depending on whether the individual is confronted with an internalizing or externalizing inducing stimulus? The current study addressed the issue of co-occurrence, but was not specifically intended to examine cognitive distortions and co-occurring problems. As such, future research needs to address how co-occurring adolescents are categorized. The use of multiple informants including clinicians trained in the diagnoses of internalizing and externalizing problems would provide a more heterogeneous sample. The subsequent examination of such a sample could provide information generalizable to both clinical and community-based adolescents. Beyond the issue of categorization there needs to be more research on the

relations of community-based adolescents' cognitive distortions and co-occurring problems.

Future research should also endeavor to include community-based male and female adolescents from a broad age range. Furthermore, these adolescents should be assessed by multiple informants (e.g., TRF, YSR, CBCL) in addition to utilizing objective measures (e.g., school counsellor reports, disciplinary records) of participants' internalizing and externalizing problems in order to increase the validity of the information gathered. Validity may also be increased by having teachers complete TRFs later in the school year which may result in better familiarity with their students' problems. Another area that may need to be addressed is the amount of TRFs each teacher would be required to complete. In the present study teachers varied in the amount of TRFs the completed based on the participation level of their students. Every effort should be made to insure that teachers are provided with enough time, and incentive to complete each TRF in a valid manner, regardless of amount.

A further methodological issue that may affect validity is the absenteeism of participants on the day of the data gathering. In the current study 21 students were absent on the day the questionnaires were administered. It is not known whether these students were qualitatively different than those present nor is it known whether their inclusion may have affected the results of this study. Studies in the future should make every practical effort to ascertain the reasons for absenteeism, or possibly provide another date for the students to complete the questionnaires.

Finally, both the HIT and CNCEQ are valid and reliable measures of general cognitive distortions, but more study is required to examine the validity of the subscales

of these measures across different populations. Further psychometric examination of the HIT and CNCEQ scales and subscales may provide, based on the results of validity studies, a set of relatively short and easy to administer questionnaires to measure cognitive distortions in a broader base of participants, and potentially utilized as components of intervention and prevention programs.

Another issue that needs to be recognized is that the YSR and TRF externalizing scales are consistent with the *DSM-IV* criteria for Affective Disorder and Conduct Disorder (Achenbach & Rescorla, 2001). Furthermore, the four self-serving cognitive distortions measured by the HIT (self-serving, blaming others, minimizing/mislabeling, assuming the worst) refer to the categories of antisocial behaviours derived from the *DSM-IV* criteria for Conduct Disorder (Barriga et al., 2001). Given the overlap between the YSR or TRF, and the HIT with respect to *DSM-IV* criteria, efforts should be made to ensure that the item overlap, specifically those based on cognitions, between these measures does not affect their discriminant validity.

The results of this current study have both added to and extended the extant research, but in doing so, more potential questions have arisen. Some have been highlighted in this section, and may be the basis for providing further impetus to expand on this area and potentially inform both theory and practice within the cognitive distortion and psychopathology literature.

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APPENDIX A

SELF-REPORTED DEMOGRAPHIC INFORMATION QUESTIONNAIRE



THE UNIVERSITY OF BRITISH COLUMBIA

October, 2008

**Department of Educational
and Counselling Psychology,
and Special Education
Faculty of Education**
2125 Main Mall
Vancouver, B.C., V6T 1Z4

Tell Us About Yourself

We are interested in learning about your background. Please follow the directions carefully, and answer all of the questions. REMEMBER, YOUR ANSWERS WILL REMAIN PRIVATE AND WILL BE SEEN ONLY BY THE RESEARCHERS.

Your full name: First _____ Last _____

1. Are you male or female? (check one) _____ Male _____ Female

2. How old are you? _____ (years)

3. What is your birth date? _____ (Month) _____ (Day) _____ (Year)

4. What grade are you in this year? (circle one)

Grade 8

Grade 10

5. Which of these adults do you live with MOST OF THE TIME? (Check all the adults that you live with).

<input type="checkbox"/> Both my parents
<input type="checkbox"/> My mother only
<input type="checkbox"/> My father only
<input type="checkbox"/> My mother and a stepfather
<input type="checkbox"/> My father and a stepmother
<input type="checkbox"/> Grandparents
<input type="checkbox"/> Other adults (describe)

6. How do you describe yourself in terms of ethnic or cultural heritage? (Check one)

<input type="checkbox"/> White (Anglo, Caucasian, etc.)
<input type="checkbox"/> First Nations (Native Canadian)
<input type="checkbox"/> Indo Canadian (East Indian)
<input type="checkbox"/> Asian (Chinese, Japanese, Korean, etc.)
<input type="checkbox"/> Latin (Spanish, Mexican, South American, etc.)
<input type="checkbox"/> Black (African, Haitian, Jamaican, etc.)
<input type="checkbox"/> Other (please describe)
<input type="checkbox"/> If you would describe your ethnic or cultural heritage in some way that is not listed above

APPENDIX B
PARENTAL CONSENT FORM



THE UNIVERSITY OF BRITISH COLUMBIA

May, 2008

**Department of Educational
and Counselling Psychology,
and Special Education
Faculty of Education**
2125 Main Mall
Vancouver, BC, Canada V6T 1Z4

Dear Parent/Guardian:

We are writing to request permission for your son/daughter to participate in a new and important research project that we are conducting in his/her school entitled: **“What are they thinking? Do irrational thoughts play a role in adolescents’ problem moods and behaviours,”** and is taking place in several secondary schools in Vancouver and Burnaby. This study is in partial fulfillment of Talino Bruno’s doctoral degree in the Department of Educational and Counselling Psychology, and Special Education. This research study is concerned with understanding how irrational thoughts influence emotions and behaviours in adolescents (ages 13-17). Listed below are several aspects of this project that you need to know.

Purpose

The purpose of the study is to learn about and understand how biased or inaccurate thoughts (cognitive distortions) may play a role in adolescents’ aggression, delinquency (externalizing) and sadness, anxiety (internalizing) problems. These problems typically increase and peak between the ages of 13 and 17. Therefore it is hoped that the information obtained from this research will help inform future educational, community and treatment programs to further help adolescents address these potential problems and reach their fullest potential.

Study Procedures

If you agree to let your child participate in this study, he or she will be asked to complete three questionnaires in one class period (approximately one hour) during regular school hours when no exams or major activities are taking place. Two of the questionnaires focus on youths’ irrational thoughts and justifications as they relate to aggression, delinquency and sadness or anxiety. One measure asks the youth to

answer questions directly about their aggressive or delinquent behaviours and their sadness or anxiety.

Due to the language-based nature of the questionnaires, adolescents who are at the beginning stages of learning English may find participation difficult. The researcher will work with teachers to determine if children who are English learners would experience success in participating in the study.

In this project, we are not “diagnosing” the adolescent. We are simply asking the adolescent to complete questionnaires that measure their level of biased or inaccurate thoughts, feelings of sadness, anxiety, and amount of participation in antisocial, aggressive behaviours.

As these questionnaires will be administered during class time, any adolescent who does not have permission to participate will work on an activity that is related to their regular program in the classroom.

Confidentiality

All of your adolescent's answers will be completely confidential and will not be available to teachers, parents, or other school personnel. No specific adolescent will be referred to by name or identified in any way in the report of the results. The adolescents' name will be removed from any measure. All information will be kept in a locked file cabinet in Talino Bruno's office at Burnaby Mental Health and Addictions. **The only time in which confidentiality will not be maintained is if your child obtains a high score in comparison to his/her peers about how anxious or sad he/she is.** The questionnaire package will contain a list of community services that deal with mental health issues that you or the youth may wish to access if necessary. You may also wish to seek further assessment for your child and use the available school resources, such as the school counselor.

There are no known risks to your adolescent; however, some questions about how they feel or have behaved may cause distress. If your child scores high on any of the internalizing or externalizing questionnaires, you will be contacted by Talino Bruno to discuss the issue. Furthermore, there will be a place for him/her to print his/her name at the end of the internalizing or externalizing questionnaire if they desire support.

All students who return completed parental consent forms, whether consent is provided or not, will have the opportunity to win a \$100.00 gift certificate for HMV. One student's name will be randomly selected and awarded the gift certificate.

Benefits: The results of this study will help us in better understanding the role irrational or biased thoughts may play in the development of sadness, anxiety or aggression and antisocial behaviour in adolescents. This is one

of the few studies in North America that has addressed these issues in community adolescents. Therefore the information gained from this study may be very helpful in the development and implementation of prevention and treatment programs.

Contact

If you have any questions about this research project, please do not hesitate to call **Kim Schonert-Reichl** at 604-xxx-xxxx or e-mail me at: xxx@xxx or **Talino Bruno** at 604-xxx-xxxx or e-mail at: xxx@xxx. If you have any concerns about your adolescent's treatment as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-xxx-xxxx. Participation in this study is entirely voluntary and you or your adolescent may refuse to participate or withdraw from the study at any time, even after signing this consent form. Also, we always respect adolescent's wishes as to whether he or she wants to participate. Refusing to participate or withdrawal will not jeopardize your adolescent's education in any way.

Please return this form within three school days from today.

Please keep a copy of this consent form for your own records.

Sincerely,

Kim Schonert-Reichl, Ph.D.

Principal Investigator
Faculty of Education
University of British Columbia

Talino Bruno M.A.

Co-Investigator
Faculty of Education
University of British Columbia

PARENT CONSENT FORM: STUDENT PARTICIPATION

Study Title: "What are they thinking? Do irrational thoughts play a role in adolescents' problem moods and behaviours."

Principal Investigator:

Kimberly A. Schonert-Reichl, Ph.D.

University of British Columbia; Department of Educational and Counselling Psychology, and Special Education

Phone: (604) xxx-xxx, e-mail: xxxx@xxxx

(KEEP THIS PORTION FOR YOUR RECORDS)

PARENT CONSENT FORM: STUDENT PARTICIPATION

I have read and understand the attached letter regarding the study entitled **"What are they thinking? Do irrational thoughts play a role in adolescents' problem moods and behaviours."** I have also kept copies of both the letter describing the study and this permission slip.

- ☐ Yes, my son/daughter has my permission to participate.
☐ No, my son/daughter does not have my permission to participate.

Parent's Signature _____

Son or Daughter's Name _____

Date _____

✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂

(DETACH HERE AND RETURN TO SCHOOL)

PARENT CONSENT FORM: STUDENT PARTICIPATION

I have read and understand the attached letter regarding the study entitled **"What are they thinking? Do irrational thoughts play a role in adolescents' problem moods and behaviours."** I have also kept copies of both the letter describing the study and this permission slip.

- ☐ Yes, my son/daughter has my permission to participate.
☐ No, my son/daughter does not have my permission to participate.

Parent's Signature _____

Son's or Daughter's Name _____

Date _____

APPENDIX C
PARTICIPANT ASSENT FORM



THE UNIVERSITY OF BRITISH COLUMBIA

July, 2008

**Department of Educational
and Counselling Psychology,
and Special Education
Faculty of Education**
2125 Main Mall
Vancouver, B.C., V6T 1Z4

The purpose of this form is to give you the information you need in order to decide whether or not you want to be in our research study entitled,
“What are they thinking? Do irrational thoughts play a role in adolescents’ problem moods and behaviours.”

Purpose

The purpose of the study is to learn about and understand how biased or inaccurate thoughts may play a role in adolescents’ aggression, delinquency (externalizing), and sadness, anxiety (internalizing) problems. These problems typically increase and peak between the ages of 13 and 17. Therefore, it is hoped that the information obtained from this research will help inform future educational, community and treatment programs to help adolescents address these potential problems and reach their fullest potential.

Study Procedures

If you agree be part of this study, you will be asked to complete three questionnaires in one class period (approximately one hour) during regular school hours when no exams or major activities are taking place. Two of the questionnaires focus on your irrational thoughts and justifications as they relate to aggression, delinquency and sadness or anxiety. One measure asks you to answer questions directly about your aggressive or delinquent behaviours and your sadness or anxiety.

In this study, we are not “diagnosing” your problems or behaviours and they are NOT TESTS. There are no right or wrong answers. We are simply asking you to complete questionnaires that measure your level of biased or inaccurate thoughts, feelings of sadness, anxiety, and amount of participation in antisocial, aggressive behaviours.

Confidentiality

Remember, no one at school or in your community (not even your parents/guardians, teacher, or school principal) will see your answers (they will be confidential). **The only time in which confidentiality will not be maintained is if you obtain a high score in comparison to your peers about how worried or sad you are, in which case your parents or caregivers will be notified.** The questionnaire package will contain a list of community services that deal with mental health issues that you may wish to access if necessary. If you become upset while answering any of the questions or would like to talk to someone about how you are feeling please let Talino Bruno or your teacher know.

We will keep your answers from the questionnaire locked in cabinets in Talino Bruno's office at Burnaby Mental Health and Addictions. No names will be used when the information is studied. In this way, the information that you give us will be kept private. The only people who will see these materials are the researchers.

It is YOUR CHOICE whether or not you want to take part in this study. If you change your mind at any time during the study, you may stop filling in the questionnaire and there will be no consequences (nothing will happen to you). If you choose not to participate, it will not affect your marks and your teacher will let you know what you should do instead during the questionnaire time.

All students who return completed parental consent forms, whether consent is provided or not, will have the opportunity to win a \$100.00 gift certificate for HMV. One student's name will be randomly selected and awarded the gift certificate.

We will be happy to answer any questions you have before signing this form now or later. Please show that you have read this form and agree to participate by signing your name on the line below. If you want a copy of this form, ask Talino Bruno.

If your parents need a consent form written in Chinese or Hindi please let Talino Bruno know before you leave this class.

I have read and understand the attached letter regarding the study entitled **“What are they thinking? Do irrational thoughts play a role in adolescents’ problem moods and behaviours.”**

☐ Yes, I agree TO PARTICIPATE in the study.

Date: _____

Name (Please print): _____

Thank you for your help!

APPENDIX D

PARTICIPATION RATES OF INDIVIDUAL SCHOOLS

The participation rate of each school was as follows: From School 1, 58 students were given parental and student consent forms of which 48 (83%) were returned. Of the 48 students, 4 were not given parental permission, 3 refused to participate, and 1 was absent on the day the questionnaires were administered. Thus, complete data was available for 41(85%) of the participants. From School 2, 144 students were given parental and student consent forms of which 133 (92%) were returned. Of the 133 students, 1 was not given parental permission, 1 refused to participate, and 10 were absent on the day the questionnaires were administered. Complete data was available for 121 (91%) of the participants. From School 3, 251 students were given parental and student consent forms of which 181 (72%) were returned. Of the 181 students, 16 were not given parental permission, 2 students refused to participate, and 4 were absent on the day the questionnaires were administered. Thus, complete data was available for 145 (80%) of the participants. From School 4, 151 students were given parental and student consent forms of which 103 (68%) were returned. Of the 103 students, 13 were not given parental permission, 2 refused to participate, and 6 were absent on the day the questionnaires were administered. Thus, complete data was available for 82 (80%) of the participants.

APPENDIX E

HOW I THINK QUESTIONNAIRE

How I Think (HIT) Questionnaire

Name _____ Date _____

Age _____ Circle one: MALE / FEMALE Administered by _____

Please don't turn this page until it's time to begin.

Each statement in this questionnaire may describe how you think about things in life. Read each statement carefully, then ask yourself, "Is it fair to say that this statement describes my thinking during the last 6 months?" Your answers will be kept private.

Mark your answers on the sheet. Don't say them out loud.

Any questions?

OK, turn the page and begin.

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Research Press

2612 North Mattis Avenue
Champaign, IL 61822
www.researchpress.com
(800) 519-2707

1. People should try to work on their problems.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

2. I can't help losing my temper a lot.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

3. Sometimes you have to lie to get what you want.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

4. Sometimes I get bored.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

5. People need to be roughed up once in a while.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

6. If I made a mistake, it's because I got mixed up with the wrong crowd.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

7. If I see something I like, I take it.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

8. You can't trust people because they will always lie to you.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

9. I am generous with my friends.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

10. When I get mad, I don't care who gets hurt.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

11. If someone leaves a car unlocked, they are asking to have it stolen.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

12. You have to get even with people who don't show you respect.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

13. Sometimes I gossip about other people.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

14. Everybody lies, it's no big deal.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

15. It's no use trying to stay out of fights.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

16. Everyone has the right to be happy.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

17. If you know you can get away with it, only a fool wouldn't steal.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

18. No matter how hard I try, I can't help getting in trouble.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

19. Only a coward would ever walk away from a fight.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

20. I have sometimes said something bad about a friend.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

21. It's OK to tell a lie if someone is dumb enough to fall for it.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

22. If I really want something, it doesn't matter how I get it.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

23. If you don't push people around, you will always get picked on.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

24. Friends should be honest with each other.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

25. If a store or home owner gets robbed, it's really their fault for not having better security.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

26. People force you to lie if they ask too many questions.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

27. I have tried to get even with someone.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

28. You should get what you need, even if it means someone has to get hurt.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

29. People are always trying to hassle me.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

30. Stores make enough money that it's OK to just take things you need.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

31. In the past, I have lied to get myself out of trouble.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

32. You should hurt people first, before they hurt you.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

33. A lie doesn't really matter if you don't know that person.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

34. It's important to think of other people's feelings.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

35. You might as well steal. If *you* don't take it, somebody *else* will.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

36. People are always trying to start fights with me.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

37. Rules are mostly meant for *other* people.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

38. I have covered up things that I have done.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

39. If someone is careless enough to lose a wallet, they deserve to have it stolen.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

40. Everybody breaks the law, it's no big deal.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

41. When friends need you, you should be there for them.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

42. Getting what you need is the only important thing.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

43. You might as well steal. People would steal from you if they had the chance.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

44. If people don't cooperate with me, it's not my fault if someone gets hurt.

AGREE STRONGLY	AGREE	AGREE SLIGHTLY	DISAGREE SLIGHTLY	DISAGREE	DISAGREE STRONGLY
-------------------	-------	-------------------	----------------------	----------	----------------------

45. I have done bad things that I haven't told people about.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

46. When I lose my temper, it's because people try to make me mad.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

47. Taking a car doesn't really hurt anyone if nothing happens to the car and the owner gets it back.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

48. Everybody needs help once in a while.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

49. I might as well lie—when I tell the truth, people don't believe me anyway.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

50. Sometimes you have to hurt someone if you have a problem with them.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

51. I have taken things without asking.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

52. If I lied to someone, that's my business.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

53. Everybody steals—you might as well get your share.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

54. If I really want to do something, I don't care if it's legal or not.

AGREE
STRONGLY

AGREE

AGREE
SLIGHTLY

DISAGREE
SLIGHTLY

DISAGREE

DISAGREE
STRONGLY

APPENDIX F

THE CHILDREN'S NEGATIVE COGNITIVE ERROR QUESTIONNAIRE

ID # _____

CHILDREN'S NEGATIVE COGNITIVE ERROR QUESTIONNAIRE (CNCEQ) INSTRUCTION

This questionnaire describes a number of situations that might happen to kids. Each situation is followed by a thought that a kid in that situation might have. This thought is in 'quotation marks.' We want to know how similar that thought is to what you might think in that situation.

Please read each situation and imagine that it is happening to you. Even if it never has in the past. Then read the thought which is in 'quotations.' Circle that statement underneath each thought that best describes how similar that thought is to how you would think in that situation. As an example let's read this:

A. You are the goalie for your soccer team. The game ends in a 1-1 tie. After the Game you hear one of your teammates say that your team should have won today. You think, 'He/she thinks it's my fault we didn't win.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

If the thought (H/she thinks it's my fault we didn't win.) was somewhat like the way you would think in that situation. You would circle:

Somewhat
Like I would
Think

B. You see two of your friends talking together at recess. As you walk towards them. They go over to the softball field and start playing catch. You think, (Maybe they're mad at me about something).

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

if the *thought* (Maybe they're mad at me about something) was a lot like the way you would think in that situation, you would circle:

A lot
Like I would
Think

Please read at your own rate and answer the questions. If you have a question, please raise your hand and I will come to your seat to answer it. Since this is a research study it is important that you answer honestly. Nobody else will be allowed to see your answers. Any questions?

1) You invite one of your friends to stay overnight at your house. Another one of your friends finds out about it. You think, 'H/She will be real mad at me for not asking them and never want to be friends again.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

2) Your class is having 4-person relay races in gym class. Your team loses. You think, 'If I had just been faster we would not have lost.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

3) You are trying out for the school softball team. You get up four times and get two hits and make two outs. You think, 'What a lousy practice I had.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

4) Your team loses a spelling contest. The other team won easily. You think, 'If I were smarter, we wouldn't have lost.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

5) Some of your friends have asked you if you're going to try out for the school soccer team. You tried out last year but did not make it. You think, 'What's the use of trying out, I couldn't make it last year.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

6) You call one of the kids in your class to talk about your math homework. If H/She says, 'I can't talk to you now, my father needs to use the phone.' You think, 'They didn't want to talk to me.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

7) You and three other students completed a group science project. Your teacher did not think it was very good and gave your group a poor grade. You think, 'If I hadn't done such a lousy job, we would have gotten a good grade.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

8) Whenever it is someone's birthday in your class. The teacher lets that student have a half hour of free time to play a game with another student. Last week it was one of your friend's birthday and they picked someone else. Now another of your friends is going to get to choose someone. You think, 'They probably won't pick me either.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

9) Your softball team is having practice. The coach tells you he would like to talk to you after practice. You think, 'He's not happy with how I'm doing and doesn't want me on the team anymore.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

10) You went to a party with one of your friends. When you first got there your friend hung around with some other kids instead of you. Later you and your friend decide to stop at his/her house for a snack before you go home. Later that night you think, 'My friend didn't seem to want to hang around with me tonight.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

11) You forgot to do your spelling homework. Your teacher tells the class to hand them in. You think, 'The teacher is going to think I don't care and I won't pass.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

12) You were having a good day in school up until the last period when you had a math quiz. You did poorly on the quiz. You think, 'School is a drag, what a waste of time.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

13) You play basketball and score 5 baskets, but missed two real easy shots. After the game you think, 'I played poorly.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

14) Last week you had a history test and forgot some of the things you had read. Today, you are having a math test and the teacher is passing out the test. You think, 'I'll probably forget what I studied just like last week.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

15) You spent the day at your friend's house. The last hour before leaving you were really bored. You think, 'Today was no fun.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

16) You are taking skiing lessons. The instructor tells the class that he does not think people are ready for the steep trails yet. You think, 'If I could only learn to ski faster, I wouldn't be holding everyone up.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

17) Your class is starting a new unit in math. The last one was really hard. When it's time for math class you think, 'That last stuff was so hard I just know I'm going to have trouble with this too.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

18) You just started a part-time job helping one of your neighbors. Twice this week you were not able to go skating with your friends because of having to work. As you see your friends leaving to go skating, you think, 'Pretty soon they won't ever want to do anything with me.'

This thought is:

almost exactly like I would think	a lot like I would think	somewhat like I would think	only a little like I would think	not at all like I would think
---	--------------------------------	-----------------------------------	--	-------------------------------------

- 19) Last week one of the kids in your class had a party and you weren't invited. This past week you heard another student in your class telling someone he was thinking of getting some kids together to go to a movie. You think, 'It'll be just like last week. I won't be asked to go.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

- 20) You did an extra credit assignment. Your teacher tells you that he would like to talk to you about it. You think, 'He thinks I did a lousy job on my assignment and he is going to give me a bad grade.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

- 21) You're with two of your friends. You ask if they would like to go to a movie this weekend. They both say they can't. You think, 'They probably just don't want to go with me.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

- 22) Your cousin calls you to ask if you'd like to go on a long bike ride. You think, 'I probably won't be able to keep up and people will make fun of me.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

- 23) Your team has just lost in a spelling contest. You were the last one up for your team and had spelled four words right. The last word was 'excellent' and you got it wrong. When you sit down you think, 'I'm not good at spelling.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

- 24) Last week you played softball and struck out twice. Today some kids from your class ask you to play soccer. You think, 'There's no sense playing. I'm no good at sports.'

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

APPENDIX G
YOUTH SELF-REPORT



Please print

YOUTH SELF-REPORT FOR AGES 11-18

For office use only
ID # _____

YOUR FULL NAME First _____ Middle _____ Last _____			PARENTS' USUAL TYPE OF WORK, even if not working now. (Please be specific — for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.) FATHER'S TYPE OF WORK _____ MOTHER'S TYPE OF WORK _____
YOUR GENDER <input type="checkbox"/> Boy <input type="checkbox"/> Girl	YOUR AGE _____	YOUR ETHNIC GROUP OR RACE _____	
TODAY'S DATE Mo. _____ Date _____ Yr. _____		YOUR BIRTHDATE Mo. _____ Date _____ Yr. _____	
GRADE IN SCHOOL _____		IF YOU ARE WORKING, PLEASE STATE YOUR TYPE OF WORK: _____ _____	
NOT ATTENDING SCHOOL <input type="checkbox"/>			Please fill out this form to reflect your views, even if other people might not agree. Feel free to print additional comments beside each item and in the spaces provided on pages 2 and 4. Be sure to answer all items.

I. Please list the sports you most like to take part in. For example: swimming, baseball, skating, skate boarding, bike riding, fishing, etc.

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, about how much time do you spend in each?

Less Than Average Average More Than Average

☐ ☐ ☐☐ ☐ ☐☐ ☐ ☐

Compared to others of your age, how well do you do each one?

Below Average Average Above Average

☐ ☐ ☐☐ ☐ ☐☐ ☐ ☐

II. Please list your favorite hobbies, activities, and games, other than sports. For example: cards, books, piano, cars, computers, crafts, etc. (Do not include listening to radio or watching TV.)

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, about how much time do you spend in each?

Less Than Average Average More Than Average

☐ ☐ ☐☐ ☐ ☐☐ ☐ ☐

Compared to others of your age, how well do you do each one?

Below Average Average Above Average

☐ ☐ ☐☐ ☐ ☐☐ ☐ ☐

III. Please list any organizations, clubs, teams, or groups you belong to.

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, how active are you in each?

Less Active Average More Active

☐ ☐ ☐☐ ☐ ☐☐ ☐ ☐

IV. Please list any jobs or chores you have. For example: paper route, babysitting, making bed, working in store, etc. (Include both paid and unpaid jobs and chores.)

☐ None

a. _____

b. _____

c. _____

Compared to others of your age, how well do you carry them out?

Below Average Average Above Average

☐ ☐ ☐☐ ☐ ☐☐ ☐ ☐

Be sure you answered all items. Then see other side.

Please print. Be sure to answer all items.

V. 1. About how many close friends do you have? (Do not include brothers & sisters)

☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more

2. About how many times a week do you do things with any friends outside of regular school hours?

(Do not include brothers & sisters) ☐ Less than 1 ☐ 1 or 2 ☐ 3 or more

VI. Compared to others of your age, how well do you:

	Worse	Average	Better	
a. Get along with your brothers & sisters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> I have no brothers or sisters
b. Get along with other kids?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Get along with your parents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Do things by yourself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

VII. 1. Performance in academic subjects.

☐ I do not attend school because _____

Check a box for each subject that you take		Failing	Below Average	Average	Above Average
Other academic subjects—for example: computer courses, foreign language, business. Do not include gym, shop, driver's ed., or other nonacademic subjects.	a. English or Language Arts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. History or Social Studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Arithmetic or Math	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d. Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	g. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any illness, disability, or handicap? ☐ No ☐ Yes—please describe: _____

Please describe any concerns or problems you have about school: _____

Please describe any other concerns you have: _____

Please describe the best things about yourself: _____

Please print. Be sure to answer all items.

Below is a list of items that describe kids. For each item that describes you *now or within the past 6 months*, please circle the **2** if the item is **very true or often true** of you. Circle the **1** if the item is **somewhat or sometimes true** of you. If the item is **not true** of you, circle the **0**.

0 = Not True			1 = Somewhat or Sometimes True			2 = Very True or Often True		
0	1	2	1. I act too young for my age	0	1	2	33. I feel that no one loves me	
0	1	2	2. I drink alcohol without my parents' approval (describe): _____	0	1	2	34. I feel that others are out to get me	
0	1	2	3. I argue a lot	0	1	2	35. I feel worthless or inferior	
0	1	2	4. I fail to finish things that I start	0	1	2	36. I accidentally get hurt a lot	
0	1	2	5. There is very little that I enjoy	0	1	2	37. I get in many fights	
0	1	2	6. I like animals	0	1	2	38. I get teased a lot	
0	1	2	7. I brag	0	1	2	39. I hang around with kids who get in trouble	
0	1	2	8. I have trouble concentrating or paying attention	0	1	2	40. I hear sounds or voices that other people think aren't there (describe): _____	
0	1	2	9. I can't get my mind off certain thoughts; (describe): _____	0	1	2	41. I act without stopping to think	
0	1	2	10. I have trouble sitting still	0	1	2	42. I would rather be alone than with others	
0	1	2	11. I'm too dependent on adults	0	1	2	43. I lie or cheat	
0	1	2	12. I feel lonely	0	1	2	44. I bite my fingernails	
0	1	2	13. I feel confused or in a fog	0	1	2	45. I am nervous or tense	
0	1	2	14. I cry a lot	0	1	2	46. Parts of my body twitch or make nervous movements (describe): _____	
0	1	2	15. I am pretty honest	0	1	2	47. I have nightmares	
0	1	2	16. I am mean to others	0	1	2	48. I am not liked by other kids	
0	1	2	17. I daydream a lot	0	1	2	49. I can do certain things better than most kids	
0	1	2	18. I deliberately try to hurt or kill myself	0	1	2	50. I am too fearful or anxious	
0	1	2	19. I try to get a lot of attention	0	1	2	51. I feel dizzy or lightheaded	
0	1	2	20. I destroy my own things	0	1	2	52. I feel too guilty	
0	1	2	21. I destroy things belonging to others	0	1	2	53. I eat too much	
0	1	2	22. I disobey my parents	0	1	2	54. I feel overtired without good reason	
0	1	2	23. I disobey at school	0	1	2	55. I am overweight	
0	1	2	24. I don't eat as well as I should	0	1	2	56. Physical problems without known medical cause:	
0	1	2	25. I don't get along with other kids	0	1	2	a. Aches or pains (not stomach or headaches)	
0	1	2	26. I don't feel guilty after doing something I shouldn't	0	1	2	b. Headaches	
0	1	2	27. I am jealous of others	0	1	2	c. Nausea, feel sick	
0	1	2	28. I break rules at home, school, or elsewhere	0	1	2	d. Problems with eyes (not if corrected by glasses) (describe): _____	
0	1	2	29. I am afraid of certain animals, situations, or places, other than school (describe): _____	0	1	2	e. Rashes or other skin problems	
0	1	2	30. I am afraid of going to school	0	1	2	f. Stomachaches	
0	1	2	31. I am afraid I might think or do something bad	0	1	2	g. Vomiting, throwing up	
0	1	2	32. I feel that I have to be perfect	0	1	2	h. Other (describe): _____	

Please print. Be sure to answer all items.

0 = Not True			1 = Somewhat or Sometimes True			2 = Very True or Often True		
0	1	2	57. I physically attack people	0	1	2	84. I do things other people think are strange (describe): _____	
0	1	2	58. I pick my skin or other parts of my body (describe): _____	0	1	2	85. I have thoughts that other people would think are strange (describe): _____	
0	1	2	59. I can be pretty friendly	0	1	2	86. I am stubborn	
0	1	2	60. I like to try new things	0	1	2	87. My moods or feelings change suddenly	
0	1	2	61. My school work is poor	0	1	2	88. I enjoy being with people	
0	1	2	62. I am poorly coordinated or clumsy	0	1	2	89. I am suspicious	
0	1	2	63. I would rather be with older kids than kids my own age	0	1	2	90. I swear or use dirty language	
0	1	2	64. I would rather be with younger kids than kids my own age	0	1	2	91. I think about killing myself	
0	1	2	65. I refuse to talk	0	1	2	92. I like to make others laugh	
0	1	2	66. I repeat certain acts over and over (describe): _____	0	1	2	93. I talk too much	
0	1	2	67. I run away from home	0	1	2	94. I tease others a lot	
0	1	2	68. I scream a lot	0	1	2	95. I have a hot temper	
0	1	2	69. I am secretive or keep things to myself	0	1	2	96. I think about sex too much	
0	1	2	70. I see things that other people think aren't there (describe): _____	0	1	2	97. I threaten to hurt people	
0	1	2	71. I am self-conscious or easily embarrassed	0	1	2	98. I like to help others	
0	1	2	72. I set fires	0	1	2	99. I smoke, chew, or sniff tobacco	
0	1	2	73. I can work well with my hands	0	1	2	100. I have trouble sleeping (describe): _____	
0	1	2	74. I show off or clown	0	1	2	101. I cut classes or skip school	
0	1	2	75. I am too shy or timid	0	1	2	102. I don't have much energy	
0	1	2	76. I sleep less than most kids	0	1	2	103. I am unhappy, sad, or depressed	
0	1	2	77. I sleep more than most kids during day and/or night (describe): _____	0	1	2	104. I am louder than other kids	
0	1	2	78. I am inattentive or easily distracted	0	1	2	105. I use drugs for nonmedical purposes (don't include alcohol or tobacco) (describe): _____	
0	1	2	79. I have a speech problem (describe): _____	0	1	2	106. I like to be fair to others	
0	1	2	80. I stand up for my rights	0	1	2	107. I enjoy a good joke	
0	1	2	81. I steal at home	0	1	2	108. I like to take life easy	
0	1	2	82. I steal from places other than home	0	1	2	109. I try to help other people when I can	
0	1	2	83. I store up too many things I don't need (describe): _____	0	1	2	110. I wish I were of the opposite sex	
				0	1	2	111. I keep from getting involved with others	
				0	1	2	112. I worry a lot	

Please be sure you answered all items.

Please write down anything else that describes your feelings, behavior, or interests:

APPENDIX H
TEACHER'S REPORT FORM



TEACHER'S REPORT FORM FOR AGES 6-18

 For office use only
ID #

Your answers will be used to compare the pupil with other pupils whose teachers have completed similar forms. The information from this form will also be used for comparison with other information about this pupil. Please answer as well as you can, even if you lack full information. Scores on individual items will be combined to identify general patterns of behavior. Feel free to print additional comments beside each item and in the spaces provided on page 2. **Please print, and answer all items.**

PUPIL'S FULL NAME First Middle Last			PARENTS' USUAL TYPE OF WORK, even if not working now (Please be specific — for example, auto mechanic, high school teacher, homemaker, laborer, lathe operator, shoe salesman, army sergeant.)	
PUPIL'S GENDER <input type="checkbox"/> Boy <input type="checkbox"/> Girl	PUPIL'S AGE	PUPIL'S ETHNIC GROUP OR RACE	FATHER'S TYPE OF WORK _____ MOTHER'S TYPE OF WORK _____	
TODAY'S DATE Mo. _____ Date _____ Yr. _____		PUPIL'S BIRTHDATE (if known) Mo. _____ Date _____ Yr. _____	THIS FORM FILLED OUT BY: (print your full name)	
GRADE IN SCHOOL	NAME AND ADDRESS OF SCHOOL		Your gender: <input type="checkbox"/> Male <input type="checkbox"/> Female Your role at the school: <input type="checkbox"/> Classroom Teacher <input type="checkbox"/> Counselor <input type="checkbox"/> Special Educator <input type="checkbox"/> Administrator <input type="checkbox"/> Teacher's Aide <input type="checkbox"/> Other (specify):	

I. For how many months have you known this pupil? _____ months

II. How well do you know him/her? 1. ☐ Not Well 2. ☐ Moderately Well 3. ☐ Very Well

III. How much time does he/she spend in your class or service per week?

IV. What kind of class or service is it? (Please be specific, e.g., regular 5th grade, 7th grade math, learning disability, counseling, etc.)

V. Has he/she ever been referred for special class placement, services, or tutoring?
☐ Don't Know 0. ☐ No 1. ☐ Yes — what kind and when?

VI. Has he/she repeated any grades? ☐ Don't Know 0. ☐ No 1. ☐ Yes — grades and reasons:

VII. Current academic performance — list academic subjects and check box that indicates pupil's performance for each subject:

Academic subject	1. Far below grade	2. Somewhat below grade	3. At grade level	4. Somewhat above grade	5. Far above grade
1. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Be sure you answered all items. Then see other side.

Please print. Be sure to answer all items.

VIII. Compared to typical pupils of the same age:	1. Much less	2. Somewhat less	3. Slightly less	4. About average	5. Slightly more	6. Somewhat more	7. Much more
1. How hard is he/she working?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. How appropriately is he/she behaving?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. How much is he/she learning?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. How happy is he/she?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Most recent achievement test scores (optional):			Percentile or grade level obtained
Name of test	Subject	Date	

X. IQ, readiness, or aptitude tests (optional):		
Name of test	Date	IQ or equivalent scores

Does this pupil have any illness or disability (either physical or mental)? ☐ No ☐ Yes— please describe:

What concerns you most about this pupil?

Please describe the best things about this pupil:

Please feel free to write any comments about this pupil's work, behavior, or potential, using extra pages if necessary.

Please print. Be sure to answer all items.

Below is a list of items that describe pupils. For each item that describes the pupil **now or within the past 2 months**, please circle the **2** if the item is **very true or often true** of the pupil. Circle the **1** if the item is **somewhat or sometimes true** of the pupil. If the item is **not true** of the pupil, circle the **0**. Please answer all items as well as you can, even if some do not seem to apply to this pupil.

0 = Not True (as far as you know)

1 = Somewhat or Sometimes True

2 = Very True or Often True

0 1 2	1. Acts too young for his/her age	0 1 2	34. Feels others are out to get him/her
0 1 2	2. Hums or makes other odd noises in class	0 1 2	35. Feels worthless or inferior
0 1 2	3. Argues a lot	0 1 2	36. Gets hurt a lot, accident-prone
0 1 2	4. Fails to finish things he/she starts	0 1 2	37. Gets in many fights
0 1 2	5. There is very little that he/she enjoys	0 1 2	38. Gets teased a lot
0 1 2	6. Defiant, talks back to staff	0 1 2	39. Hangs around with others who get in trouble
0 1 2	7. Bragging, boasting	0 1 2	40. Hears sounds or voices that aren't there (describe): _____
0 1 2	8. Can't concentrate, can't pay attention for long	0 1 2	41. Impulsive or acts without thinking
0 1 2	9. Can't get his/her mind off certain thoughts; obsessions (describe): _____	0 1 2	42. Would rather be alone than with others
0 1 2	10. Can't sit still, restless, or hyperactive	0 1 2	43. Lying or cheating
0 1 2	11. Clings to adults or too dependent	0 1 2	44. Bites fingernails
0 1 2	12. Complaints of loneliness	0 1 2	45. Nervous, high-strung, or tense
0 1 2	13. Confused or seems to be in a fog	0 1 2	46. Nervous movements or twitching (describe): _____
0 1 2	14. Cries a lot	0 1 2	47. Overconforms to rules
0 1 2	15. Fidgets	0 1 2	48. Not liked by other pupils
0 1 2	16. Cruelty, bullying, or meanness to others	0 1 2	49. Has difficulty learning
0 1 2	17. Daydreams or gets lost in his/her thoughts	0 1 2	50. Too fearful or anxious
0 1 2	18. Deliberately harms self or attempts suicide	0 1 2	51. Feels dizzy or lightheaded
0 1 2	19. Demands a lot of attention	0 1 2	52. Feels too guilty
0 1 2	20. Destroys his/her own things	0 1 2	53. Talks out of turn
0 1 2	21. Destroys property belonging to others	0 1 2	54. Overtired without good reason
0 1 2	22. Difficulty following directions	0 1 2	55. Overweight
0 1 2	23. Disobedient at school	0 1 2	56. Physical problems <i>without known medical cause</i> :
0 1 2	24. Disturbs other pupils	0 1 2	a. Aches or pains (<i>not</i> stomach or headaches)
0 1 2	25. Doesn't get along with other pupils	0 1 2	b. Headaches
0 1 2	26. Doesn't seem to feel guilty after misbehaving	0 1 2	c. Nausea, feels sick
0 1 2	27. Easily jealous	0 1 2	d. Eye problems (<i>not</i> if corrected by glasses) (describe): _____
0 1 2	28. Breaks school rules	0 1 2	e. Rashes or other skin problems
0 1 2	29. Fears certain animals, situations, or places other than school (describe): _____	0 1 2	f. Stomachaches
0 1 2	30. Fears going to school	0 1 2	g. Vomiting, throwing up
0 1 2	31. Fears he/she might think or do something bad	0 1 2	h. Other (describe): _____
0 1 2	32. Feels he/she has to be perfect		
0 1 2	33. Feels or complains that no one loves him/her		

Please print. Be sure to answer all items.

0 = Not True (as far as you know)			1 = Somewhat or Sometimes True			2 = Very True or Often True		
0	1	2	57. Physically attacks people	0	1	2	84. Strange behavior (describe): _____	
0	1	2	58. Picks nose, skin, or other parts of body (describe): _____	0	1	2	85. Strange ideas (describe): _____	
0	1	2	59. Sleeps in class	0	1	2	86. Stubborn, sullen, or irritable	
0	1	2	60. Apathetic or unmotivated	0	1	2	87. Sudden changes in mood or feelings	
0	1	2	61. Poor school work	0	1	2	88. Sulks a lot	
0	1	2	62. Poorly coordinated or clumsy	0	1	2	89. Suspicious	
0	1	2	63. Prefers being with older children or youths	0	1	2	90. Swearing or obscene language	
0	1	2	64. Prefers being with younger children	0	1	2	91. Talks about killing self	
0	1	2	65. Refuses to talk	0	1	2	92. Underachieving, not working up to potential	
0	1	2	66. Repeats certain acts over and over; compulsions (describe): _____	0	1	2	93. Talks too much	
0	1	2	67. Disrupts class discipline	0	1	2	94. Teases a lot	
0	1	2	68. Screams a lot	0	1	2	95. Temper tantrums or hot temper	
0	1	2	69. Secretive, keeps things to self	0	1	2	96. Seems preoccupied with sex	
0	1	2	70. Sees things that aren't there (describe): _____	0	1	2	97. Threatens people	
0	1	2	71. Self-conscious or easily embarrassed	0	1	2	98. Tardy to school or class	
0	1	2	72. Messy work	0	1	2	99. Smokes, chews, or sniffs tobacco	
0	1	2	73. Behaves irresponsibly (describe): _____	0	1	2	100. Fails to carry out assigned tasks	
0	1	2	74. Showing off or clowning	0	1	2	101. Truancy or unexplained absence	
0	1	2	75. Too shy or timid	0	1	2	102. Underactive, slow moving, or lacks energy	
0	1	2	76. Explosive and unpredictable behavior	0	1	2	103. Unhappy, sad, or depressed	
0	1	2	77. Demands must be met immediately, easily frustrated	0	1	2	104. Unusually loud	
0	1	2	78. Inattentive or easily distracted	0	1	2	105. Uses alcohol or drugs for nonmedical purposes (<i>don't</i> include tobacco) (describe): _____	
0	1	2	79. Speech problem (describe): _____	0	1	2	106. Overly anxious to please	
0	1	2	80. Stares blankly	0	1	2	107. Dislikes school	
0	1	2	81. Feels hurt when criticized	0	1	2	108. Is afraid of making mistakes	
0	1	2	82. Steals	0	1	2	109. Whining	
0	1	2	83. Stores up too many things he/she doesn't need (describe): _____	0	1	2	110. Unclean personal appearance	
				0	1	2	111. Withdrawn, doesn't get involved with others	
				0	1	2	112. Worries	
				0	1	2	113. Please write in any problems the pupil has that were not listed above.	
				0	1	2	_____	
				0	1	2	_____	
				0	1	2	_____	

APPENDIX I

MEANS AND STANDARD DEVIATIONS OF VARIABLES OF INTEREST

BY GENDER

Gender	<i>M</i>	<i>SD</i>	Minimum	Maximum	Range
Male					
YSR Internalizing <i>T</i> score	53.94	10.49	30.00	76.00	46.00
YSR Externalizing <i>T</i> score	54.37	9.73	29.00	77.00	48.00
TRF Internalizing <i>T</i> score	42.36	6.48	37.00	65.00	28.00
TRF Externalizing <i>T</i> score	45.80	7.11	42.00	67.00	25.00
CNCEQ Total	45.74	14.51	24.00	91.00	76.00
HIT Total	2.50	.72	1.00	4.68	3.68
Female					
YSR Internalizing <i>T</i> score	52.82	10.39	27.00	85.00	58.00
YSR Externalizing <i>T</i> score	51.43	9.85	29.00	79.00	50.00
TRF Internalizing <i>T</i> score	43.23	6.81	39.00	66.00	27.00
TRF Externalizing <i>T</i> score	45.84	6.10	43.00	68.00	25.00
CNCEQ Total	46.20	14.85	24.00	102.00	78.00
HIT Total	2.11	.62	1.00	3.86	2.86

Notes. YSR = Youth Self-Report; TRF = Teacher's Report Form; CNCEQ = Children's Negative Cognitive Error Questionnaire; HIT = How I Think.

APPENDIX J

MEANS AND STANDARD DEVIATIONS OF VARIABLES OF INTEREST BY AGE

Age	<i>M</i>	<i>SD</i>	Minimum	Maximum	Range
Early Adolescents					
YSR Internalizing <i>T</i> score	52.41	9.92	30.00	82.00	52.00
YSR Externalizing <i>T</i> score	51.77	9.77	29.00	77.00	48.00
TRF Internalizing <i>T</i> score	44.74	8.08	39.00	66.00	27.00
TRF Externalizing <i>T</i> score	47.24	7.90	42.00	67.00	25.00
CNCEQ Total	47.08	15.20	24.00	102.00	78.00
HIT Total	2.26	.69	1.02	4.68	3.66
Middle Adolescents					
YSR Internalizing <i>T</i> score	53.97	10.74	27.00	85.00	58.00
YSR Externalizing <i>T</i> score	53.49	9.93	29.00	79.00	50.00
TRF Internalizing <i>T</i> score	41.67	5.35	37.00	65.00	28.00
TRF Externalizing <i>T</i> score	44.91	5.42	42.00	68.00	26.00
CNCEQ Total	45.22	14.28	15.00	100.00	85.00
HIT Total	2.31	.69	1.00	4.25	3.25

Notes: YSR = Youth Self-Report; TRF = Teacher's Report Form; CNCEQ = Children's Negative Cognitive Error Questionnaire; HIT = How I Think.

APPENDIX K

SELECTION CRITERIA FOR PROBLEM CATEGORIES

Categorization Criteria	Category
T scores ≥ 60 on externalizing scale and T scores < 60 on internalizing scale	Externalizing
T scores ≥ 60 on internalizing scale and T scores < 60 on externalizing scale	Internalizing
T scores ≥ 60 on both internalizing and externalizing scales	Co-occurring
T scores < 60 on both internalizing and externalizing scales	No problem

Note. T -scores could be from either the TRF or YSR.

APPENDIX L

MEAN DIFFERENCE BETWEEN STUDY AND NORMATIVE DATA FOR YSR
AND TRF INTERNALIZING AND EXTERNALIZING PROBLEMS

Measures	<i>M</i>	<i>SD</i>	<i>T</i>	<i>df</i>	Effect size (Cohen's <i>d</i>)
Males					
YSR Internalizing <i>T</i> score					
Sample data	53.93	10.5	4.60*	730	.34
Normative data ^a	50.00	9.8			
YSR Externalizing <i>T</i> score					
Sample data	54.37	9.7	5.09*	730	.38
Normative data ^a	50.10	9.8			
TRF Internalizing <i>T</i> score					
Sample data	42.36	6.5	9.62*	717	.72
Normative data ^a	50.30	9.2			
TRF Externalizing <i>T</i> score					
Sample data	45.08	7.1	7.04*	717	.53
Normative data ^a	50.90	9.1			
Females					
YSR Internalizing <i>T</i> score					
Sample data	52.82	10.4	3.23*	710	.24
Normative data ^a	50.10	10.1			
YSR Externalizing <i>T</i> score					
Sample data	51.42	9.8	1.48	710	.11
Normative data ^a	50.2	10.0			
TRF Internalizing <i>T</i> score					
Sample data	43.23	6.8	8.84*	765	.64
Normative data ^a	50.4	9.5			
TRF Externalizing <i>T</i> score					
Sample data	45.84	6.1	6.29*	765	.45
Normative data ^a	50.60	8.9			

Notes: ^aAchenbach and Rescorla (2001); YSR = Youth Self-Report; TRF = Teacher's Report Form

* $p < .05$

APPENDIX M

MEAN DIFFERENCE AMONG YSR AND TRF INTERNALIZING AND
EXTERNALIZING PROBLEMS

Measures	<i>M</i>	<i>SD</i>	<i>T</i>	<i>df</i>	Effect size (Cohen's <i>d</i>)
Males					
Internalizing <i>T</i> scores					
YSR internalizing <i>T</i> score	53.93	10.5	11.43*	318	1.28
TRF internalizing <i>T</i> score	42.36	6.5			
Externalizing <i>T</i> scores					
YSR externalizing <i>T</i> score	54.37	9.7	9.48*	318	1.06
TRF externalizing <i>T</i> score	45.08	7.1			
Females					
Internalizing <i>T</i> scores					
YSR internalizing <i>T</i> score	52.82	10.4	9.10*	359	.96
TRF internalizing <i>T</i> score	43.23	6.8			
Externalizing <i>T</i> scores					
YSR externalizing <i>T</i> score	51.42	9.8	6.21*	359	.66
TRF externalizing <i>T</i> score	45.84	6.1			

Notes: YSR = Youth Self-Report; TRF = Teacher's Report Form

APPENDIX N
CERTIFICATE OF ETHICS APPROVAL

THE UNIVERSITY OF BRITISH COLUMBIA



Research Ethics, Office of Research Services

Suite 102, 6190 Agronomy Road

Vancouver, B.C. V6T 1Z3

Phone: 604-827-5112

Fax: 604-822-5093

Our File: xxxx

June 23, 2008

Dr. Kimberly A. Schonert-Reichl, Educational & Counselling Psychology, and Special Education

Dear Dr. Kimberly A. Schonert-Reichl,

RE: Your proposed study: **What Are They Thinking? Cognitive Distortions and Adolescent Externalizing and Internalizing Problems**

The University of British Columbia Behavioural Research Ethics Board has reviewed the protocol for your proposed research project. The Committee found the procedures to be ethically acceptable and a Certificate of Approval will be issued upon the Committee's receipt of written agency approval from the **Burnaby, Coquitlam, and Vancouver School boards.**

If you have any questions, please call me at 604-xxx-xxxx.

Sincerely,

Shirley A. Thompson
Manager, Behavioural Research Ethics Board



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

ACKNOWLEDGEMENT LETTER

PRINCIPAL INVESTIGATOR: Kimberly A. Schonert-Reichl	INSTITUTION / DEPARTMENT: UBC/Education/Educational & Counselling Psychology, and Special Education	UBC BREB NUMBER: H07-xxxx
SPONSORING AGENCIES: N/A		
PROJECT TITLE: What Are They Thinking? Cognitive Distortions and Adolescent Externalizing and Internalizing Problems		
<p>This letter will acknowledge receipt of the following document(s) regarding the above-mentioned study: I am attaching three agency approval letters from the Burnaby, Coquitlam, and Vancouver School boards, as requested in my Approval Certificate.</p> <ol style="list-style-type: none"> 1. Burnaby School Board approval letter 2. Coquitlam Scholl Board approval letter 3. Vancouver School Board approval letter 		
DATE OF ACKNOWLEDGEMENT: School Approval letters September 25, 2009		

*Acknowledged on behalf of the Behavioural Research Ethics Board
and signed electronically by:*

Ms. Shirley Thompson, Manager