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Running Head: COGNITIVE ORGANIZATION IN DEPRESSED ADOLESCENTS

Core Beliefs, Self-Perception, and Cognitive Organization in Depressed Adolescents

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Abstract

This study examined the relationships between cognitive products (i.e., core beliefs and self-perception) and cognitive structure (or organization) in clinically depressed adolescents and nonpsychiatric controls (average age = 14.68). Adolescents with major depressive disorder showed significantly higher scores than controls on the Young Schema Questionnaire domains of Disconnection, Impaired Autonomy and Impaired Limits. These individuals also demonstrated poorer self-concept than controls on scholastic abilities, social acceptance, athletic competence, physical appearance, job competence, behavioral conduct and global self-worth, as well as perceptions of limited social networks. The organization of self-referent adjectives was more tightly interconnected for negative content and less interconnected for positive content in depressed adolescents than nonpsychiatric controls. Specificity of cognitive organization to themes of interpersonal and achievement beliefs/self-perceptions was also found, particularly for positive content. Implications of the findings for the cognitive vulnerability model of depression and future directions are discussed.

Core Beliefs, Self-Perception, and Cognitive Organization in Depressed Adolescents

Adolescence tends to be a period of high risk for the development of depression (Rohde, Beevers, Stice, & O'Neil, 2009). Major Depressive Disorder (MDD) typically has its initial onset in mid- to late- adolescence, with 75% of adults reporting that the first onset of their depression was in adolescence (Kim-Cohen et al., 2003). The lifetime prevalence of MDD in adolescents is as high as 18% (Rudolph, 2009). Moreover, between 10 and 20% of youth experience subsyndromal or minor depression (Kessler & Walters, 1998) and a large percentage (20-50%) of adolescents report significant symptomatology (Kessler, Avenevoli, & Merikangas, 2001; Petersen et al., 1993). Depression tends to be chronic and recurrent, with reported relapse rates in adolescents of 12% within 1 year and 33% within 4 years (Lewinsohn, Clarke, Seeley, & Rohde, 1994). Although numerous factors contribute to depression, negative thinking plays a prominent role.

Cognitive Model of Depression

Beck's (Beck, Rush, Shaw, & Emery, 1979) cognitive model of depression purports that depressed individuals have negative self-schemas that develop early in childhood, but that remain dormant until triggered by salient negative life events. Once activated, schemas negatively bias how information is attended to, encoded, interpreted, stored, and retrieved from memory, leading to an increase in negative thinking and subsequent or concurrent depressive symptoms (Beck et al., 1979; Clark, Beck, & Alford, 1999). Beck's conceptualization has received substantial empirical support both as a model of etiology and as a treatment protocol for adult depression (see Beck & Dozois, in press; Dozois & Beck, 2008; Ingram, Miranda, & Segal, 1998; Scher, Ingram, & Segal, 2005, for reviews).

A distinction is often made in the literature between "deeper" cognitions – those involving core beliefs and schemas – and more "surface" level and easily accessible cognitions, such as automatic thoughts and dysfunctional attitudes (see Garratt, Ingram, Rand, & Sawalani, 2007). A vast number of studies have demonstrated that depression is associated with increases in negative thinking and information processing biases (see Dozois & Beck, 2008; Ingram, Steidtmann, & Bistricky, 2008). Although considered most pivotal conceptually, deeper constructs such as self-schemas have been much less researched.

Self-schemas are believed to be comprised of both *structure* (which refers to the organization, representation, and storage of information in memory) and *propositions* (the actual content of the information, such as core beliefs, that is stored in memory; see Ingram et al., 1998). The purpose of this study was to test self-schema structure and content in a sample of depressed and nonpsychiatric adolescents.

Research that has examined negative cognitive structure or organization in adult depression has shown that depressed individuals have highly interconnected negative self-schemas, but tend to lack well-organized positive self-schemas (Dozois & Dobson, 2001a; Dozois & Frewen, 2006). Consistent with Beck's model, research also suggests that negative cognitive structure or organization in depressed individuals remains stable following symptom remission and may be a vulnerability factor for further depressive episodes (Dozois, 2007; Dozois & Dobson, 2001b). Whether these negative cognitive structures are also evident in adolescent depression remains an empirical question.

Cognitive Vulnerability to Depression in Adolescence

Cognitive models of depression have been extended to the study of depressive disorders in adolescence, with research demonstrating that this is a critical period of vulnerability (e.g.,

Abela & Hankin, 2008; Kim-Cohen et al., 2003). Adolescence often corresponds to the first onset of the disorder and is characterized by formative cognitive and identity development. Depression in youth is associated with negative automatic thoughts, dysfunctional attitudes, hopelessness, low perceived self-worth, negative explanatory styles, irrational beliefs and information processing biases (Hayden, Seeds, & Dozois, 2009; Jacobs, Reinecke, Gollan, & Kane, 2008).

The past decade has also witnessed a proliferation of research on cognitive diathesis-stress models in adolescent depression with considerable supportive evidence (Abela & Hankin, 2008; Jacobs et al., 2008). For example, more than 20 prospective studies (most using the Children's Attributional Style Questionnaire, CASQ; Seligman et al., 1984; CASQ-R; Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998) have linked negative attributional styles with subsequent depressive symptoms. With increasing age, the interaction of attributional style and life events appears to become more strongly associated with subsequent depressive symptoms (see Jacobs et al., 2008). Similarly, dysfunctional attitudes, either in isolation or when combined with adverse life events, have been found in 6 studies to predict later depressive symptoms (Jacobs et al., 2008). Finally, research on self-perception as a cognitive vulnerability factor has yielded mixed evidence, with some studies supporting the relationship between negative self-perception and later depressive symptoms and other studies supporting the converse or a reciprocal relationship (see Jacobs et al., 2008, for review). Most of this research has focused on more surface-level cognitions (e.g., the cognitive byproducts of the self-schema). The organization or structure of information in the schema has not previously been examined in this age group.

Present Study

The present study examined the relationship between cognitive products (i.e., core beliefs and self-perception) and cognitive organization in a sample of clinically depressed adolescents versus a nonpsychiatric control group. Depressed youth were expected to display more highly interconnected negative self-schemas and more loosely-interconnected positive schemas, relative to the never depressed group, consistent with the adult literature (Dozois & Dobson, 2001a, 2003). Previous research on cognitive organization in depressed adults has also focused on the consolidation of interpersonal- and achievement-related content in the schema (Dozois, 2002; Dozois & Dobson, 2003; Dozois & Frewen, 2006). The present study examined the consolidation of interpersonal- and achievement-related schema content in depressed youth and its relation with deeper cognitive products and propositions, specifically core beliefs and self-perception. Given that a secondary interest involved the specificity of content, the relations among cognitive organization for interpersonal and achievement content and core-beliefs and perceptions about the self involving these same themes were also examined. Cognitive organization of interpersonal content was hypothesized to relate specifically to self-perceived interpersonal competence and core beliefs related to self in relationship to others. The organization of achievement content was predicted to be related specifically to self-perceived academic, job, and athletic competence and related core-beliefs.

Method

Participants

A total of 22 depressed adolescents and 25 never-depressed community controls (60% female; 98% Caucasian) participated in the study. Participants were between the ages of 13 and 17 years (M = 14.68, SD = 2.33). Individuals in the depressed group were all referred for treatment at the Child and Adolescent Mental Health Care Program, London Health Sciences Centre, a teaching

hospital in London, Ontario, Canada. The nonpsychiatric controls were recruited from the community via media advertisements. Exclusionary criteria for both groups consisted of Bipolar Disorder, Substance Dependence or Abuse, evidence of active psychosis, and cognitive impairments. To be eligible for study participation, all participants were required to score no lower than average on the Wechsler Intelligence Scale for Children – 4th Edition (WISC-IV, Canadian Norms; Wechsler, 2004) Vocabulary subtest. Group status was determined using the Diagnostic Interview for Children and Adolescents – IV (DICA-IV; Reich, 2000), a semi-structured interview designed to yield reliable psychiatric diagnoses in youth. The depressed group met diagnostic criteria for MDD. Nonpsychiatric controls did not meet diagnostic criteria for any current mental disorder and had no lifetime history of clinical depression or anxiety.

Measures

Diagnostic Interview for Children and Adolescents-IV (DICA-IV). The DICA-IV (Reich, 2000) is a semi-structured diagnostic interview for youth ages 6 to 17 that assesses lifetime psychiatric diagnoses based on DSM-IV criteria. The DICA-IV demonstrates satisfactory test-retest reliability for adolescents (one week reliability = .72; Reich, 2000). Youth who meet DICA-IV diagnostic criteria for MDD tend to show elevated scores on various self-report measures of depression (see Rudolph & Lambert, 2007, for review), supporting the convergent validity of this instrument. The computerized adolescent (ages 13-17) version of the DICA-IV was administered to all participants in interview format by one of four diagnosticians (a clinical psychology resident, two PhD-level clinical psychologists, or an advanced practiced nurse) all trained in the administration of this instrument.

Beck Depression Inventory-II (BDI-II). The BDI-II (Beck, Steer, & Brown, 1996) is a 21-item self-report inventory assessing the presence and severity of depressive symptoms. Items are

presented in a multiple-choice format (0-3), with total scores ranging from 0 - 63. The BDI-II has excellent psychometric properties (Dozois & Covin, 2004).

Young Schema Questionnaire – Short Form (YSQ). The YSQ is a self-report measure designed to assess 15 different core beliefs about self (Young, Klosko, & Weishaar, 2003). The scale consists of 75 items, each of which is rated from 1 (completely untrue of me) to 6 (describes me perfectly). The long form of this measure has received most empirical attention and appears to be a valid measure of the verbal products (i.e., an indirect assessment) of core early maladaptive schemas (EMS; Riso et al., 2006). The psychometric properties of the short form of this instrument also appear to be on par with those of the full (205-item) scale, demonstrating similar levels of reliability, validity and clinical utility (Hoffart et al., 2005; Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002). To increase parsimony, the analyses focused on the following four schema domains supported by a previous confirmatory factor analysis (Hoffart et al., 2005): Disconnection (made up of Emotional Deprivation, Emotional Inhibition, Mistrust/Abuse, Social Isolation, and Defectiveness); Impaired Autonomy (comprised of core beliefs related to Subjugation, Dependence, Failure, Vulnerability, Abandonment, Enmeshment and Insufficient Self-control); Impaired Limits (made up of Insufficient Self-control and Entitlement); and Exaggerated Standards (composed of Self-Sacrifice and Unrelenting Standards).

Harter Self-Perception Scale for Adolescents (SPSA). The SPSA (Harter, 1985) is a multidimensional self-report inventory that assesses domains of self-concept in adolescence. The instrument contains a total of 43-items, yielding a Global Self-Worth score and eight subscale scores: Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Job Competence, Romantic Appeal, Behavioral Conduct, and Close Friendship. Items are written

in a structured alternative format in which respondents choose one of two statements that best describes themselves (e.g., “Some teenagers feel that they are just as smart as others their age, but other teenagers aren’t so sure they are as smart as others their age”). Respondents choose one of the two statements and then indicate whether the choice is “Sort of True of Me” or “Really True of Me”. Items are scored on a 4-point Likert scale and range from negative to most positive self-perception. The psychometric properties of the scale have been sufficiently demonstrated, with good reliability and validity obtained (Granleese & Joseph, 1994; Harter, Waters, & Whitesell, 1998; Harter, Whitesell, & Junkin, 1998).

Psychological Distance Scaling Task (PDST). The PDST (Dozois, 2002; Dozois & Dobson, 2001a, 2001b, 2003) was used as a measure of cognitive organization and measured the interconnectedness of positive and negative schema content. Participants were presented with a square grid, divided into four quadrants on the computer screen. The x-axis referred to self-descriptiveness, and was anchored with the descriptions “Very much like me” and “Not at all like me”. The y-axis pertained to the valence of the adjectives and was anchored with the descriptions “Very positive” and “Very negative”. Adjectives were displayed individually in the centre of the grid. After considering both axes, participants positioned each adjective on the grid using a computer mouse and a visually presented pointer. Participants were informed that there were no correct or incorrect responses, and were encouraged to complete the task in an honest and open fashion. Four practice trials were presented initially to ensure familiarity with the task. After each trial, participants were required to press one of two keyboard buttons to confirm that their response was intended. Participants were given additional opportunities to make the correct placement if a given response was not intended. Following each response, a new grid and adjective were displayed on the screen until all 60 ratings had been completed.

The coordinate point (x- and y-axis) for each adjective was calculated by the computer to determine the average interstimulus distance among the positive schematic adjectives and among the negative schematic adjectives. Self-referent interstimulus distances (interpersonal/achievement, positive/negative) served as the dependent variables. The computations used to derive self-relevant distances entailed dividing the sum of squared positive or negative interpersonal or achievement self-relevant distances by the total number of possible yes-rated positive or negative interpersonal/achievement distances. The formula for this idiographic computation is provided by:

$$\frac{\sqrt{\sum (X_1 - X_2)^2 + (X_1 - X_3)^2 + \ldots + (X_{14} - X_{15})^2 + (Y_1 - Y_2)^2 + (Y_1 - Y_3)^2 + \ldots + (Y_{14} - Y_{15})^2}}{n(n-1)/2}$$

where X is the adjective placement on the self-descriptiveness axis, Y is the adjective placement on the valence axis, and n is the total number of self-descriptive adjectives. An assumption of this task is that less distance among adjectives is indicative of greater interconnectedness or consolidation of self-referent content, whereas greater distance among adjectives is indicative of less interconnectedness or consolidation. The psychometric properties of this measure have been supported in other research (see Dozois & Dobson, 2001a; 2001b, for additional detail regarding the development and use of this measure).

Adjective Stimuli

The stimuli for the PDST consisted of adjectives derived from a previous list (Dozois & Frewen, 2006; Myers, 1984) and chosen on the basis of their relevance to the core beliefs identified by Beck's cognitive theory (i.e., beliefs related to unlovability and beliefs related to helplessness/ incompetence; see Beck et al., 1979). The lists of adjectives were also chosen based on a pilot study that tested the appropriateness of the content for this age group. An

independent sample of 23 adolescents (age range 13-17) provided ratings on the comprehensibility of each of 80 initial adjectives. Adolescents were instructed to rate their understanding of each adjective on a 5-point scale ranging from 1 ("I did not understand this word *at all*") to 3 ("I could use this word *accurately* in a sentence") to 5 ("I could give an *accurate* definition of the word"). The final adjectives were chosen based on both their ease of understanding and their equivalence across content sets.

The adjective sets were matched on emotional intensity, imaginability, word length and word frequency. There were 15 adjectives in each of the following categories: interpersonal positive (e.g., *encouraged, comforted*), interpersonal negative (e.g., *unwanted, rejected*), achievement positive (e.g., s*uccessful, capable*), and achievement negative (e.g., *incompetent, lazy*). Five Ph.D. clinical psychology graduate students (blind to the original categorization of content sets) provided separate ratings of these adjectives, by indicating whether they more clearly reflected the interpersonal or achievement domain. The interrater agreement between the ratings and the intended content domains was excellent (6 = .87).

Procedure

After confirming eligibility for the study, and completing the process of informed consent, participants were administered the WISC-IV Vocabulary subtest and the BDI-II. Participants then completed questionnaire measures of self-perception (i.e., SPSA) and maladaptive core beliefs (i.e., YSQ). Participants were subsequently administered a computerized task designed to measure the interconnectedness of positive and negative interpersonal and achievement schema content.

Results

Interrater Reliability

Twenty percent of the audiotaped DICA-IV interviews were randomly selected from the initial pool of tapes, for blind review by a senior Ph.D. student in clinical psychology trained in the administration of this diagnostic instrument. Diagnoses were treated as dichotomous categories, either present or absent. Interrater reliability was determined by means of the kappa coefficient (Cohen, 1960), which assesses the degree of concordance between ratings, controlling for chance levels of agreement. Interrater agreement was perfect for group status (i.e., depressed, nonpsychiatric; kappa coefficient = 1.00).

Sample Characteristics

Initial analyses involved a descriptive examination of the sample characteristics. There were no statistically significant group differences in age, t (45) = 1.01, $\underline{p}$ = ns, education, t(41) = 1.42, $\underline{p}$ = ns or on WISC-IV Vocabulary scores, t(44) = -1.73, $\underline{p}$ = ns. There were no statistically significant group differences in ethnicity, χ^2 (1, $\underline{N}$ = 46) = .86, p = *ns*. The depressed group had a significantly greater proportion of females than did the nonpsychiatric controls, χ^2 (1, $\underline{N}$ = 47) = 5.38, $\underline{p} < .05$. It should be noted, however, that the analyses did not vary significantly when gender was controlled statistically in subsequent analyses; as such, only the results from the full sample are reported.

The mean BDI-II scores for the depressed group were in the severe range (M = 37.82, SD = *9.79*), whereas scores for the nonpsychiatric controls were in the minimal range (M = 3.60, SD = *3.72*). The depressed sample was also characterized by comorbidity. Six individuals in the depressed group also met diagnostic criteria for Dysthymia, 3 for Panic Disorder, 9 for Generalized Anxiety Disorder, 7 for specific or social phobia, 5 for obsessive-compulsive disorder and 1 for anorexia nervosa.

Core Beliefs and Self-Perception

The means (standard deviations) of the scores on core beliefs and self-perception measures are presented in Table 1. In order to increase parsimony and reduce the probability of Type I error, the core belief domains of Disconnection, Impaired Autonomy, Impaired Limits and Exaggerated Standards, supported in a previous confirmatory factor analysis (Hoffart et al., 2005) were used in place of the 15 subscales of the YSQ. Multivariate analysis of variance (MANOVA) revealed a significant omnibus effect, $F(4, 42) = 35.75$, $p < .001$. Although depressed adolescents demonstrated higher scores on each domain, group differences were significant only for Disconnection, Impaired Autonomy, and Impaired limits (see Table 1).

A similar analysis was conducted for self-worth indices using the SPSA. This analysis revealed an overall group effect, $F(9, 37) = 30.23$, $p < .001$. Depressed adolescents scored significantly lower than did controls on their perception of scholastic abilities, social acceptance, athletic competence, physical appearance, job competence, behavioral conduct, perception of having close friendships, and global self-worth (see Table 1).

Cognitive Organization

A 2 Group (depressed, nonpsychiatric) x 2 Adjective Valence (positive, negative) mixed analysis of variance (ANOVA) was conducted on the cognitive organization of interpersonal content. There was a significant main effect of valence which was qualified by a Group by Valence interaction, $F(1, 30) = 25.59$, $p < .001$. Tests of simple effects indicated that the depressed group showed greater distance (i.e., less interconnectedness) of positive content, $t(42) = 6.01$, $p < .001$, and less distance (i.e., more interconnectedness) among negative adjectives, $t(42) = -3.87$, $p < .001$, than controls. A split-plot ANOVA on achievement content also revealed significant main effects for Group and Valence, which were qualified by their interaction, $F(1, 26) = 54.19$, $p < .001$. Follow-up tests of the significant interaction suggested that depressed

adolescents again showed greater distance (less interconnectedness) for positive content, t (38) = 7.45, $p < .001$, and less distance (greater interconnectedness) for negative content, t (42) = -7.95, $p < .001$, than did nonpsychiatric controls (see Table 2). It is important to point out that the degrees of freedom vary in these analyses because of the idiographic nature of the task (i.e., it is possible that some individuals do not perceive any of the words on particular word list to be self-descriptive).

Specificity of Interpersonal and Achievement Organization

Partial correlations were used to determine whether interpersonal and achievement aspects of cognitive organization were differentially related to core beliefs and perceptions of self in congruent domains. The four core belief domains from the YSQ were included in this analysis, as were six of the subscales from the SPSA deemed most relevant to interpersonal (Social Acceptance, Romantic Appeal, Close Friendship) and achievement (Scholastic Competence, Job Competence, Athletic Competence) domains. In each separate analysis, a Bonferroni correction was used to control for Type I error rates (criterion alpha = .005 [$\alpha/10$]).

The first set of analyses involved correlations between interpersonal positive distance and core beliefs/perceptions of self, controlling for achievement positive distance. In this analysis, the EMS domain of Disconnection remained significant (pr = .57, $p < .001$). That is, greater distance among adjectives (or less interconnection) was associated with greater beliefs of disconnection. In addition, self-perceptions of Social Acceptance (pr = -.62, $p < .001$), Romantic Appeal (pr = -.59, $p < .001$) and Close Friendship (pr = -.51, $p < .001$) were statistically significant. The second set of analyses examined the relationship between interstimulus distance for achievement content and core beliefs/perceptions of self, after controlling for the organization of interpersonal positive organization. Impaired Autonomy (pr = .43, p = .006) was

marginally significant following the Bonferroni correction. No other correlations were significant. When the relationships among negative interpersonal distance and core beliefs/ perceptions of self (controlling for achievement negative organization) were tested, the EMS domain of Disconnection (pr = -.38, $p < .05$) was significant, but not after the Bonferroni correction was applied. Finally, the relationship between interstimulus distance for negative achievement content and core beliefs/perception of self was significant for the following domains, after controlling for the organization of interpersonal negative organization: Disconnection (pr = -.61, $p < .001$) and Impaired Autonomy (pr = -.66, $p < .001$).

Discussion

Research with adults has indicated that the organization of cognitive self-schemas may represent a vulnerability factor for depression (Dozois & Dobson, 2001b), with negative cognitive content being highly interconnected and positive cognitive content, loosely connected in adults with MDD. The present study examined whether the self-schemas of depressed youth share similar organizational properties, an area that has not been studied previously and which may have important implications for prevention and treatment. Links between the organization of interpersonal and achievement content and core beliefs and perceptions about the self were also examined.

Consistent with adults with MDD, the results suggested that depressed adolescents differ from their non-depressed peers in terms of their core beliefs, self-perception, and cognitive organization. With regard to core beliefs, adolescents with MDD were significantly more likely than nonpsychiatric controls to endorse core beliefs related to the domains of Disconnection, Impaired Autonomy, and Impaired Limits on the YSQ. Previous research with adults has similarly demonstrated an association between depressive symptoms and the domains of

Disconnection and Impaired Autonomy (Hoffart et al., 2005; Wang, Halvorsen, Eisemann, & Waterloo, 2010). Moreover, a recent study with adolescents (Van Vlierberghe, Braet, Bosmans, Rosseel, & Bogels, 2010) found that depressive symptoms were uniquely associated with core beliefs related to Disconnection (specifically, Emotional Deprivation and Defectiveness/Shame) and Impaired Autonomy (i.e., Failure to Achieve and Dependence/Incompetence). The domain of Disconnection encompasses beliefs that one's need for security and emotional support will not be consistently met, whereas Impaired Autonomy reflects negative beliefs about one's competence. That is, the depressed adolescents in the current sample endorsed more negative beliefs about their ability to succeed and to function independently.

It is not entirely clear why depressed adolescents also scored higher than nonpsychiatric controls on the core belief domain of Impaired Limits. Follow-up analyses of the individual YSQ subscales that comprise this domain, however, indicated that groups differed only on Insufficient Self-Control and not on Entitlement. Insufficient self-control pertains to the inability to restrain from excessively expressing one's emotions and to low frustration tolerance, both of which are likely exacerbated during a depressive episode (Halvorsen et al., 2009).

Analyses of the Harter Self-Perception Scale revealed that depressed adolescents further endorsed having a highly negative self-view. Specifically, these individuals rated themselves significantly lower on perceived global self-worth, scholastic abilities, social acceptance, athletic competence, physical appearance, job competence, behavioral conduct and having close friendships, relative to their non-depressed counterparts. This finding is consistent with previous studies, which found a negative relationship between self-perception and depressive symptoms (i.e., increased depressive symptoms were associated with a more negative self-view; see Jacobs et al., 2008).

Consistent with the key hypotheses of this study, group differences were also evident in the organization of information in the self-schema, with depressed adolescents showing greater interconnectedness of negative information and less interconnectedness of positive information, relative to controls. Conceptually, greater organization of negative information is likely to trigger negative cognitive products and processes which, in turn, are associated with increased depressive symptoms. Given the findings of negative cognitive organization in depressed adolescents, it is possible that this organization may confer a vulnerability to MDD in the adolescent period. Conversely, greater organization of positive information may serve as a resiliency factor, promoting more positive core beliefs and self-view. The lack of interconnected positive content, therefore, may further predispose these adolescents to develop depression. It will be important for future research to examine the relationship between cognitive organization and depressive symptoms prospectively, to determine whether the presence of depressotypic cognitive organization predates the onset of depression.

A secondary aim of this study was to examine the content-specificity of cognitive organization for interpersonal- and achievement-content. As predicted, the organization of interpersonal and achievement-related content was, in some instances, related specifically to core beliefs and self-concepts reflecting each theme. That is, less unified positive interpersonal content was positively associated with increased beliefs that one's needs for nurturance, acceptance, safety and stability would not be met in a reliable manner (cf. Young et al., 2003). Poorly organized positive interpersonal content was also associated with lower perceptions of social acceptance, romantic appeal or having close friendships. These relations were maintained after controlling for the organization of achievement content. Some specificity was also demonstrated for positive achievement distance (controlling for positive interpersonal content)

which was associated (albeit marginally once the Bonferroni correction was applied) with the belief that one is not able to function independently or perform successfully. In other words, greater distances among adjective content (or the lack of interconnectedness) was associated with beliefs related to impaired autonomy. These findings suggest that a well-organized schema for specific content affects one's perceptions of self and relations to others. Such a well-organized schema is consistent with the construct of an internal working model in attachment theory, whereby early interactions between an infant and his or her caregiver lead to the development of generalized belief system about self, others, and the relationships between the two (Ingram, 2003; Moran, Neufeld-Bailey, & DeOliveira, 2008).

In contrast to positive organization, which appeared to demonstrate some specificity to thematically-related beliefs and self-perceptions, less specificity was shown for negative content. For example, although interpersonal negative organization was associated with Disconnection, this relation was not maintained when the Bonferroni correction was applied. Moreover, the organization of achievement content (controlling for interpersonal organization) was associated with both Disconnection and Impaired Autonomy.

Thus, although some specificity was shown for positive content, the findings were somewhat equivocal for negative content which parallels the adult literature on related personality constructs of sociotropy and autonomy (Coyne & Whiffen, 1995). Some research has shown, for instance, that both negative social and failure-related events impact self-worth perception in both social and achievement domains (Frewen & Dozois, 2006).

To summarize, the findings from this study are consistent with the possibility that highly interconnected negative content and loosely connected positive content within the self-schema may confer risk for depression in adolescents. The results are consistent with the adult literature

(Dozois, 2007; Dozois & Beck, 2008), but further research is necessary to test whether maladaptive cognitive organization predates the onset of depression. Longitudinal research that assesses cognitive organization in vulnerable (e.g., youth of depressed parents) but not currently depressed adolescents would help to determine whether cognitive organization is causally related to depression (as opposed to a concomitant or consequence of depression). It will also be important to determine the relative contributions (and sequencing) of a well-organized negative schema and a poorly consolidated positive schema to depression (cf. Abela & Scheffler, 2008).

Future research would also benefit from an evaluation of the modifiability of negative and positive cognitive organization, particularly in adolescent samples. Previous research using adult samples has demonstrated that, whereas negative organization appears to remain stable even when depressive symptoms remit, positive organization improves (i.e., becomes more interconnected; e.g., Dozois, 2007) . However, treatment with cognitive therapy has been found to modify negative structures (Dozois et al., 2009). The extent to which negative and positive cognitive organization is changeable with empirically-supported treatments for adolescents remains to be assessed. Such investigations are necessary for targeting early interventions to disrupt the recurrent nature of depressive disorders. Whether preventative interventions have an effect on the development and consolidation of negative cognitive organization is also worth investigating. The present research suggests that further investigation of the organization of the self-schema may be a fruitful line of research for better understanding possible etiological factors in the development of adolescent depression and for the clinical management of this prevalent and impairing mental health disorder.

References

Abela, J. R. Z., & Hankin, B. L. (Eds.). (2008). *Handbook of depression in children and adolescents*. New York: Guilford.

Abela, J. R. Z., & Scheffler, P. (2008). Conceptualizing cognitive vulnerability to depression in youth: A comparison of the weakest link and additive approaches. *International Journal of Cognitive Therapy, 1*, 333-351.

Beck, A. T., & Dozois, D. J. (in press). Cognitive therapy: Current status and future directions. *Annual Review of Medicine*.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck Depression Inventory-II Manual*. San Antonio, TX: Psychological Corporation.

Clark, D. A., Beck, A. T., & Alford. (1999). *Scientific foundations of cognitive theory and therapy of depression*. New York: Wiley.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*, 37-46.

Coyne, J. C., & Whiffen, V. E. (1995). Issues in personality as diathesis for depression: The case of sociotropy-dependency and autonomy-self-criticism. *Psychological Bulletin, 118*, 358-378.

Dozois, D. J. A. (2002). Cognitive organization of self-schematic content in nondysphoric, mildly dysphoric, and moderately-severely dysphoric individuals. *Cognitive Therapy and Research, 26*, 417-429.

Dozois, D. J. A. (2007). Stability of negative self-structures: A longitudinal comparison of depressed, remitted, and nonpsychiatric controls. *Journal of Clinical Psychology, 63*, 319-338.

Dozois, D. J. A., & Beck, A. T. (2008). Cognitive schemas, beliefs and assumptions. In K. S. Dobson & D. J. A. Dozois (Eds.), *Risk factors in depression* (pp. 121-143). Oxford: Elsevier/Academic Press.

Dozois, D. J. A., Bieling, P. J., Patelis-Siotis, I., Hoar, L., Chudzik, S., McCabe, K., et al. (2009). Changes in self-schema structure in cognitive therapy for major depressive disorder: a randomized clinical trial. *Journal of Consulting and Clinical Psychology, 77*, 1078-1088.

Dozois, D. J. A., & Covin, R. (2004). The Beck Depression Inventory-II (BDI-II), Beck Hopelessness Scale (BHS), and Beck Scale for Suicide Ideation (BSS). In D. L. Segal & M. Hilsenroth (Eds.), *Personality assessment and psychopathology* (Vol. 2, pp. 50-69). Hoboken, NJ: Wiley.

Dozois, D. J. A., & Dobson, K. S. (2001a). Information processing and cognitive organization in unipolar depression: Specificity and comorbidity issues. *Journal of Abnormal Psychology, 110*, 236-246.

Dozois, D. J. A., & Dobson, K. S. (2001b). A longitudinal investigation of information processing and cognitive organization in clinical depression: Stability of schematic interconnectedness. *Journal of Consulting and Clinical Psychology, 69*, 914-925.

Dozois, D. J. A., & Dobson, K. S. (2003). The structure of self-schema in clinical depression: Differences related to episode recurrence. *Cognition & Emotion, 17*, 933-941.

Dozois, D. J. A., & Frewen, P. A. (2006). Specificity of cognitive structure in depression and social phobia: A comparison of interpersonal and achievement content. *Journal of Affective Disorders, 90*, 101-109.

Frewen, P. A., & Dozois, D. J. A. (2006). Self-worth appraisal of life events and Beck's congruency model of depression vulnerability. *Journal of Cognitive Psychotherapy: An International Quarterly, 20*, 231-240.

Garratt, G., Ingram, R. E., Rand, K. L., & Sawalani, G. (2007). Cognitive processes in cognitive therapy: Evaluation of the mechanisms of change in the treatment of depression. *Clinical Psychology: Science and Practice, 14*, 224-239.

Granleese, J., & Joseph, S. (1994). Further psychometric validation of the Self-Perception Profile for Children. *Personality and Individual Differences, 16*, 649-651.

Halvorsen, M., Wang, C. E., Richter, J., Myrland, I., Pedersen, S. K., Eisemann, M., et al. (2009). Early maladaptive schemas, temperament and character traits in clinically depressed and previously depressed subjects. *Clinical Psychology & Psychotherapy, 16*, 394-407.

Harter, S. (1985). *Manual for the self-perception profile for children.* Denver, CO: University of Denver.

Harter, S., Waters, P., & Whitesell, N. R. (1998). Relational self-worth: Differences in perceived worth as a person across interpersonal contexts among adolescents. *Child Development, 69*, 756-766.

Harter, S., Whitesell, N. R., & Junkin, L. J. (1998). Similarities and differences in domain-specific and global self-evaluations of learning-disabled, behaviorally disordered, and normally achieving adolescents. *American Educational Research Journal, 35*, 653-680.

Hayden, E., Seeds, P. M., & Dozois, D. J. A. (2009). Risk and vulnerbility in adolescent depression. In C. A. Essau (Ed.), *Treatment of adolescent depression* (pp. 27-56). London: Oxford University Press.

Hoffart, A., Sexton, H., Hedley, L. M., Wang, C. E., Holthe, H., Haugum, J. A., et al. (2005). The structure of maladaptive schemas: A confirmatory factor analysis and a psychometric evaluation of factor-derived scales. . *Cognitive Therapy and Research, 29*, 627-644.

Ingram, R. E. (2003). Origins of cognitive vulnerability to depression. *Cognitive Therapy and Research, 27*, 77-88.

Ingram, R. E., Miranda, J., & Segal, Z. V. (1998). *Cognitive vulnerability to depression*. New York: Guilford.

Ingram, R. E., Steidtmann, D. K., & Bistricky, S. L. (2008). Information processing: Attention and memory. In K. S. Dobson & D. J. A. Dozois (Eds.), *Risk factors in depression* (pp. 145-169). New York: Elsevier.

Jacobs, R. H., Reinecke, M. A., Gollan, J. K., & Kane, P. (2008). Empirical evidence of cognitive vulnerability for depression among children and adolescents: A cognitive science and developmental perspective. *Clinical Psychology Review, 28*, 759-782.

Kessler, R. C., Avenevoli, S., & Merikangas, K. R. (2001). Mood disorders in children and adolescents: An epidemiologic perspective. *Biological Psychiatry, 49*, 1002-1014.

Kessler, R. C., & Walters, E. E. (1998). Epidemiology of DSM-III-R major depression and minor depression among adolescents and young adults in the National Comorbidity Survey. *Depression and Anxiety, 7*, 3-14.

Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder - Developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry, 60*, 709-717.

Lewinsohn, P. M., Clarke, G. N., Seeley, J. R., & Rohde, P. (1994). Major depression in community adolescents: Age at onset, episode duration, and time to recurrence. *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, 809-818.

Moran, G., Neufeld-Bailey, H., & DeOliveira, C. A. (2008). The roots of depression in early attachment experiences. In K. S. Dobson & D. J. A. Dozois (Eds.), *Risk factors in depression* (pp. 289-316). Oxford: Elsevier.

Myers, J. (1984). *Self-reference and the encoding of personal information during affective episodes and remission.* Unpublished doctoral dissertation, University of Calgary, Calgary, Alberta.

Petersen, A. C., Compas, B. E., Brooksgunn, J., Stemmler, M., Ey, S., & Grant, K. E. (1993). Depression in adolescence. *American Psychologist, 48*, 155-168.

Reich, W. (2000). Diagnostic interview for children and adolescents (DICA). *Journal of the American Academy of Child and Adolescent Psychiatry, 39*, 59-66.

Riso, L. P., Froman, S. E., Raouf, M., Gable, P., Maddux, R. E., Turini-Santorelli, N., et al. (2006). The long-term stability of early maladaptive schemas. *Cognitive Therapy and Research, 30*, 515-529.

Rohde, P., Beevers, C. G., Stice, E., & O'Neil, K. (2009). Major and minor depression in female adolescents: Onset, course, symptom presentation, and demographic associations. *Journal of Clinical Psychology, 65*, 1339-1349.

Rudolph, K. D. (2009). Adolescent depression. In I. H. Gotlib & C. L. Hammen (Eds.), *Handbook of depression* (2nd ed., pp. 444-466). New York: Guilford.

Rudolph, K. D., & Lambert, S. F. (2007). Child and adolescent depression. In E. J. Mash & R. A. Barkley (Eds.), *Assessment of childhood disorders* (4th ed., pp. 213-252). New York: Guilford.

Scher, C. D., Ingram, R. E., & Segal, Z. V. (2005). Cognitive reactivity and vulnerability: Empirical evaluation of construct activation and cognitive diatheses in unipolar depression. *Clinical Psychology Review, 25*, 487-510.

Seligman, M. E. P., Kaslow, N. J., Alloy, L. B., Peterson, C., Tanenbaum, R. L., & Abramson, L. Y. (1984). Attributional style and depressive symptoms among children. *Journal of Abnormal Psychology, 93*, 235-238.

Thompson, M., Kaslow, N. J., Weiss, B., & Nolen-Hoeksema, S. (1998). Children's Attributional Style Questionnaire Revised: Psychometric examination. *Psychological Assessment, 10*, 166-170.

Van Vlierberghe, L., Braet, C., Bosmans, G., Rosseel, Y., & Bogels, S. (2010). Maladaptive schemas and psychopathology in adolescence: On the utility of Young's schema theory in youth. *Cognitive Therapy and Research, 34*, 316-332.

Wang, C. E. A., Halvorsen, M., Eisemann, M., & Waterloo, K. (2010). Stability of dysfunctional attitudes and early maladaptive schemas: A 9-year follow-up study of clinically depressed subjects. *Journal of Behavior Therapy and Experimental Psychiatry, 41*, 389-396.

Wechsler, D. (2004). *WISC-IV Canadian manual.* Toronto: Harcourt Assessment.

Welburn, K., Coristine, M., Dagg, P., Pontefract, A., & Jordan, S. (2002). The schema questionnaire - short form: Factor analysis and relationship between schemas and symptoms. *Cognitive Therapy and Research, 26*, 519-530.

Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy : A practitioner's guide*. New York: Guilford

Table 1. *Means (Standard Deviations) of Core Beliefs and Self-Perception by Group*

Variable	Depressed (n = 22)	Nonpsychiatric (n = 25)
	M (*SD*)	*M* (*SD*)
YSQ – Disconnection	94.63 (21.63)	37.78 (12.52)***
YSQ – Impaired Autonomy	99.09 (25.83)	44.32 (11.39)***
YSQ – Impaired Limits	34.59 (8.74)	21.16 (6.41)***
YSQ – Exaggerated Standards	35.14 (7.64)	30.64 (9.38)
SPSA – Scholastic	10.81 (3.62)	16.48 (3.38)***
SPSA – Social Acceptance	10.04 (4.48)	17.76 (2.40)***
SPSA – Athletic Competence	8.77 (4.05)	14.76 (3.89)***
SPSA – Physical Appearance	8.29 (3.83)	15.24 (2.91)***
SPSA – Job Competence	11.88 (2.96)	16.52 (2.77)***
SPSA – Romantic Appeal	10.82 (3.55)	15.36 (2.71)***
SPSA – Behavioral Conduct	11.41 (2.99)	16.28 (2.68)***
SPSA – Close Friendship	11.74 (4.97)	17.65 (2.71)***
SPSA – Global	7.50 (2.25)	17.75 (2.10)***

Note. YSQ = Young Schema Questionnaire; SPSA = Self-Perception Scale for Adolescents;

***$p < .001$

Table 2. *Means (Standard Deviations) of Cognitive Organization by Group*

Variable	Depressed (n = 22)	Nonpsychiatric (n = 25)
	M (*SD*)	*M* (*SD*)
Interpersonal Positive	0.84 (0.32)	0.38 (0.18) ***
Interpersonal Negative	1.05 (0.31)	1.58 (0.46) **
Achievement Positive	1.03 (0.33)	0.40 (0.20) ***
Achievement Negative	0.71 (0.34)	1.72 (0.38) ***

Note. Greater distance = less interconnected; Less distance = greater interconnectedness; Data from the PDST were not normally distributed and were consequently transformed logarithmically.

*** $p < .001$; ** $p < .01$