Prevention of Depressive Symptoms in Adolescents: Do Sociotropy and

Achievement Orientation Moderate the Effects?

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Abstract

The purpose of the present study was to examine the efficacy of a cognitive-behavioral intervention for preventing depressive symptoms in adolescents in comparison to a nonspecific, attention control group and a no intervention/assessment only control. Participants were 217 students attending a local public school [Mean age = 14.43 (*SD* = .70)]; 64.1% of the sample was female. The personality orientations of sociotropy (neediness, connectedness) and achievement (self-criticism, individualistic achievement) were assessed at baseline to examine whether these individual characteristics moderated the relation between the interventions and changes in depressive symptoms measured with the CES-D and CDI. Results indicated that, controlling for baseline depressive symptoms, self-criticism and individualistic achievement each significantly moderated the intervention effect, and there was a nonsignificant trend for neediness to be a moderator as well. Whereas the relation between self-criticism and changes in depressive symptoms was strong and significant for those in the control group, this association was less apparent in the CB group. In addition, high levels of individualistic achievement were associated with lower levels of depression, particularly in the CB condition. There was no evidence that the nonspecific control condition affected participants' depression scores. These results highlight the importance of identifying individual characteristics that can alter adolescents' response to cognitive-behavioral interventions for preventing depressive symptoms. Moreover, the CB program appears to provide benefits over and above exposure to a supportive environment.

Epidemiological studies have shown that the prevalence of depression is about 1 to 2% in pre-pubertal children and about 3 to 8% in adolescents (Costello et al., 1996; Kovacs, 1996). Adolescent depression is associated with many negative outcomes including substance abuse, high risk sexual behavior, academic problems, and increased risk of suicide (Birmaher et al., 1996; Brent et al., 1988). Moreover, early onset depression has been linked with an increased risk of the recurrence of depressive episodes in later adolescence and adulthood (Emslie et al., 1997; Harrington, Fudge, Rutter, Pickles, & Hill, 1990). Thus, preventing depression in children and adolescents is an important public health goal.

The Institute of Medicine (Mrazek & Haggerty, 1994) classified prevention programs into three distinct categories based on the population groups to whom the interventions are directed. A universal preventive intervention is administered to all members of a specified population. Selective prevention programs are given to members of a subgroup of a population whose risk is deemed to be above average. Finally, indicated preventive interventions are given to individuals who manifest sub-clinical signs or symptoms of the disorder.

In a meta-analysis of 30 depression prevention programs, Horowitz and Garber (2006) outlined the advantages and limitations of each type of preventive intervention and compared the average effect sizes of all three approaches. An important strength of universal prevention programs is that they do not single out individuals for treatment, thereby reducing the problem of stigma, and the drop out rates of these programs tend to be low. In contrast, targeted programs (i.e., selective, indicated) are more likely to reach individuals who are most likely to benefit from the intervention.

Results of the meta-analysis (Horowitz & Garber, 2006) showed that selective and indicated programs had larger effect sizes than universal programs, although all three types of

interventions have had small to moderate effects. One reason for these modest effects may be that there are individual differences in responses to the programs. Therefore, an important goal with regard to preventing depression is to identify who will respond best to which program(s). The present study examined one particular individual differences variable-- sociotropy and achievement orientation--that has been linked with depression (Beck, 1983; Blatt, 1974), and we hypothesized that these traits would moderate the effects of the intervention on depression.

Sociotropy describes individuals who are highly dependent on the views that others have of them. Individuals who are sociotropic are consumed by personal relationships with other individuals, and often their happiness and moods depend less on their personal self-worth and more on what they believe others think of them. Sociotropy is synonymous with the broader theme of relatedness and reflects the need for secure interpersonal relationships. Highly sociotropic individuals are excessively concerned and sensitive to the possibility of disapproval from others, and their sense of worth is based on receiving love and acceptance from others (McBride, Bacchiochi, & Bagby, 2005).

A second personality orientation is achievement focus, also sometimes referred to as autonomy. Autonomy is a characteristic that describes a person who is very independent and finds self worth in personal accomplishments. Individuals who are high achievement oriented tend to derive their self-worth from their accomplishments and their ability to work independently toward a goal. Although some aspects of this trait can be beneficial, being overly self-critical can heighten one's risk for depression, particularly when faced with achievement related stressors.

These personality orientations may contribute to differential responses to the cognitive-behavioral versus nonspecific interventions. Whereas the cognitive-behavioral intervention

provides a structured and didactic format that teaches students problem-solving, assertiveness, and cognitive reappraisal, the nonspecific attention control group provides a structurally equivalent program in which participants engage in more social exchanges. Thus, it is possible that individuals with high levels of individualistic achievement will do particularly well in the CB condition, whereas those high in connectedness may benefit from the nonspecific attention groups as well as the CB intervention, given that the latter has a significant social competence component in the curriculum (Poessel, Baldus, Horn, Groen, & Hautzinger, 2005).

In the one study to actually test this hypothesis in a study of depression prevention programs with adolescents, Horowitz, Garber, Ciesla, Young, and Mufson (2007) found that higher levels of baseline sociotropy predicted lower levels of depressive symptoms in the interpersonal therapy group, but not in either the CB or control group. Thus, adolescents who highly valued interpersonal relationships appeared to particularly benefit from a program that focused on social communication.

With regard to the achievement orientation, Horowitz et al. (2007) found that higher levels of achievement orientation predicted lower levels of depressive symptoms in the interpersonal and control group, but not in the CB group. They suggested that high achievement oriented adolescents may have more mastery experiences (i.e. good grades, athletic accomplishments), which then fosters positive self-esteem and lower levels of depressive symptoms regardless of intervention. Interestingly, however, level of achievement orientation was not related to depression for those in the CB condition. Two differences between the current study and the one by Horowitz and colleagues is that in the present study the two distinct subcomponent of the construct were examined. Second, in contrast to the CB program used by

Horowitz et al, the CB programs in this study placed greater emphasis on setting and completing

goals, which is particularly compatible with an achievement focused orientation.

In summary, the current study had three aims: (a) to replicate and extend the findings of

the cognitive-behavioral depression prevention program developed and tested in Germany by

Poessel et al. (2005) by examining the efficacy of the intervention with youth in the United

States; (b) to compare the efficacy of the CB program to a nonspecific attention control condition

that was structurally equivalent but content distinct from the CB intervention; and (c) to examine

whether the personality orientations of sociotropy and achievement moderate the effects of the

interventions on depressive symptoms.

Method

Participants

Students in Wellness classes in a middle Tennessee high school were recruited to

participate in the study. Parental consent and student assent were obtained for 217 out of a possible

400 students (54.25%). Most were freshmen (80%); the average age was 14.43 (*SD* = .70); 64.1%

of the sample was female. The sample was 73.3% Caucasian, 16.1% African-American, 3.7%

Latino, 0.5% Asian/ Pacific Islander, 0.5% Native American, 5.5% Mixed Heritage, and 0.9%

Other. The first cohort was recruited in February, 2006 and completed the post-test in May, 2006.

The second cohort was recruited in August, 2006 and completed the post-test in December, 2006.

The schools served communities characterized as predominantly working (e.g., sales clerks,

factory workers) to middle class (e.g., farmers, mechanics).

Measures

Depressive Symptoms. Depressive symptoms were measured using the Children's

Depression Inventory (CDI; Kovacs, 1985) and the Center for Epidemiological Studies-Depression

scale (CES-D; Radloff, 1977). The CDI is a 27-item, self-report measure that assesses a range of depressive symptoms; the item about suicidal ideation was removed due to concerns of the participating schools, leaving 26 items. The CES-D is a self-report measure of the frequency of 20 depressive symptoms over the past week using a 5 point Likert scale. Both the CDI (e.g., Saylor, Finch, Spirito, & Bennett, 1984; Smucker, Craighead, Craighead, & Green, 1986) and CES-D (Roberts, Andrews, Lewinsohn, & Hops, 1990) have been found to have good reliability and validity.

Sociotropy and Achievement Orientation. Sociotropy and achievement orientation were measured using the 53-item Sociotropy-Achievement Scale for Children (SASC; Little & Garber, 2000). The SASC yields scores on two factors: Sociotropy (Affiliativeness) (e.g., "I care a lot about what other people think of me") and Achievement Orientation (e.g., "I should be able to do well at anything if I try hard enough"). The Sociotropy Scale can be divided further into Neediness and Connectedness; the Achievement Scale can be divided into Self-criticism and Individualistic Achievement. The SASC subscales have adequate reliability and validity (Little & Garber, 2000).

Procedure

Letter describing the study were sent home to parents of all students in Wellness classes. All students who received parental consent were invited to participate. Students were randomly assigned by class to participate in the Cognitive Behavior Program (CB) (n= 56), the Nonspecific Attention Control Program (NSP) (n=74), or the assessment only control condition (n=87). Participants and group leaders were aware of group assignments, whereas those conducting the assessments did not know to which condition students had been assigned. Participants completed questionnaires the week prior to beginning the intervention (baseline). Both intervention programs involved ten 90-minute sessions delivered once a week during students' regular Wellness class

period. There were 8 groups for the cognitive behavioral program and 7 groups for the non-specific attention control program. Groups were same sex and had between 4 and 16 students, with a median size of 9 for the CB groups and 10 for the NSP program. Participants in the no intervention control group attended their regularly scheduled Wellness classes where they were taught their normal curriculum in a classroom setting similar to that used in the intervention groups. Post-intervention assessments were completed during school by participants in all three conditions a week after the last group session (post-intervention).

Interventions

The cognitive-behavioral prevention program (CB) targets social information processing based on Dodge's (1993) model. The cognitive aspect of this program teaches the relations among thoughts, feelings, and behaviors. The CB program also includes a social part, which includes both assertiveness and social competence training (Possel et al., 2005). In contrast to the cognitive-behavior prevention program there was an education program that involved attention control. Though this particular intervention condition did not involve actual cognitive-behavior therapy the focus was on the actual attention leaders and co-leaders gave the participants. The attention control program was a good intervention condition that lied between the training group and the control group. The leaders and co-leaders main responsibility in this program was to concentrate on giving each of the individuals equal and control attention.

Training and Supervision of Group Leaders

Group leaders were Masters level clinical psychology graduate students or recent clinical psychology Ph.Ds or Ed.Ds, all of whom had had prior therapy training. Co-leaders were clinical graduate students or undergraduate honors students. To ensure treatment integrity (a) detailed treatment manuals were used for both CB and AC conditions, (b) group leaders and co-leaders

participated in training workshops before beginning the study, and (c) throughout the intervention, weekly supervision meetings were held with clinical experts. During supervision, each session was carefully reviewed and plans for the next session were outlined based on the manuals. Sessions were video-taped and reviewed by the overall supervisor (PP).

Demographics and Attrition

The three conditions did not vary significantly in age, sex, or race/ethnicity (see Table 1) or baseline depression and sociotropy and achievement orientation scores. Of the 217 participants assessed at pre-intervention, 193 (88.94%) completed the post-intervention evaluation.

Data Analysis Plan

For analyses predicting post-intervention depressive symptoms based on intervention group,, ANCOVA was used with pre-intervention depressive symptom scores as the covariate. When predicting depressive symptoms using a continuous variable, linear regression was used with pre-intervention symptoms in the first step. Interactions between continuous and categorical variables were analyzed using linear regression following the suggestions of Aiken and West (1991). In the case of intervention group, for example, dummy variables were created to contrast each of the active intervention conditions with the control condition. Interaction terms were created using the product of each of the dummy coded intervention condition variables with a centered version of the other independent variable in question. Both interaction terms then were entered in the final step of the regression.

<div align="center">

Results

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Means, Standard Deviations, and Correlations

Table 2 presents the means, standard deviations, and correlations among all study variables. The two measures of depressive symptoms were highly correlated at both Time 1 ($r = .84$, $p <$

.001) and Time 2 ($r = .83$, $p < .001$), and with themselves from Time 1 to Time 2, CES-D ($r = .60$, $p < .001$) and CDI ($r = .73$, $p < .001$). Neediness and Connectedness were positively correlated ($r = .60$, $p < .001$), whereas Self-criticism and Individualistic Achievement were negatively correlated ($r = -.26$, $p < .001$). Interestingly, however, the correlation between Neediness and both the CES-D ($r = .45$, $p < .001$) and the CDI ($r = .47$, $p < .001$) was stronger than the correlation between Connectedness and the CES-D ($r = .19$, $p < .05$) and the CDI ($r = .06$, *ns*). Moreover, whereas Time 1 Neediness significantly correlated with Time 2 CES-D and CDI, Connectedness did not. Finally, whereas the correlations between Time 1 Self-criticism and the depression measures at both Times 1 and 2 were significant and positive, the correlations of Time 1 Individualistic Achievement and the depression measures were significant and negative.

Intervention Effects as a Function of Achievement Orientation and Sociotropy

Achievement Orientation. Results showed significant interactions of intervention condition by self-criticism predicting Time 2 depressive symptoms, controlling for Time 1 depressive symptoms, for both the CES-D ($\beta = .352$, $t = 2.50$, $p < .01$, $\Delta R^2 = .01$) (see Figure 1) and CDI ($\beta = .283$, $t = 2.77$, $p < .01$, $\Delta R^2 = .01$) (see Figure 2). These interactions indicated that the relation between self-criticism and depression was particularly strong for those in the control condition, but less so for those in the CB condition. In addition, a significant interaction of intervention condition by individualistic-achievement predicted CDI ($\beta = .31$, $t = 2.66$, $p < .01$, $\Delta R^2 = .01$) (see Figure 3). This interaction showed that high levels of individualistic achievement were associated with lower levels of depressive symptoms, and this was particularly pronounced in the CB condition.

Sociotropy. Results showed a significant main effect for Connectedness predicting post-intervention depressive symptoms, controlling for baseline symptoms for the CES-D ($\beta = -.29$, $t = -2.31$, $p < .01$, $\Delta R^2 = .01$) and the CDI ($\beta = -.20$, t = -2.12, $p < .01$, $\Delta R^2 = .01$). A non-significant

trend was found for the interaction of intervention condition by Neediness predicating T2 CDI (β = 0.152, t = -.99, $p < .10$) (see Figure 4).

<div align="center">Discussion</div>

The purpose of the present study was to examine the efficacy of a cognitive-behavioral depression prevention program developed and tested in Germany with youth in the United States, to compare the CB program to a nonspecific attention control group and a no intervention/assessment only control group, and to examine whether the personality orientations of sociotropy and achievement moderated the effect of the interventions on depressive symptoms measured at post-intervention, controlling for baseline depression scores. Four interesting findings emerged. First, a significant intervention effect was found, although it was moderated by the personality orientations studied here. Second, the relation between levels of self-criticism and changes in depressive symptoms varied as a function of intervention group. Third, the relation between levels of individualistic achievement and changes in depressive symptoms also varied as a function of the intervention. Finally, levels of connectedness at baseline significantly predicted changes in depressive symptoms, and there was a nonsignificant trend for the relation between levels of neediness and depressive symptoms to vary by condition.

The significant intervention effects found in the present study serve as a replication of the German study that developed this program (Poessel et al., 2005). Thus, this cognitive-behavioral program can be feasibly and effectively implemented in high schools in the United States. The study by Poessel et al., however, did not assess the personality orientations of sociotropy and achievement. Therefore, it is not possible to exactly contrast the results of the two studies.

Perhaps the most interesting finding in the current study was that self-criticism moderated the effect of the interventions on changes in depressive symptoms. Among the no intervention

control group, there was a strong positive relation between baseline levels of self-criticism and post-intervention depression scores. That is, at low levels of self-criticism, depressive symptoms were low, whereas the slope was quite steep and showed that at high levels of self-criticism, depressive symptoms were much higher, and in fact, were within the clinical range (Roberts et al., 1990). In contrast, although the slope of the line for the cognitive-behavioral group was in a similar direction, it was much less steep. That is, the relation between self-criticism and depression was not as strong in the CB group. Thus, having gone through the CB intervention might have helped to weaken the link between self-criticism (SC) and depression, especially for those at high levels of SC. Moreover, this effect was particularly robust given that it was significant for both measures of depressive symptoms.

How might the cognitive-behavioral intervention have reduced the relation between self-criticism and depression? The CB program teaches individuals to question the accuracy of their beliefs and to not always assume the worst. It is possible that the students in this condition learned to question their beliefs about their own competence and the implications of their perceived competence for their sense of themselves and their future. That is, having high levels of self-criticism did not have to automatically result in their feeling down, because they might have learned that things can turn out better than they typically expected.

For students in the nonspecific attention control condition, although the slope of the relation between self-criticism and depressive symptoms was similar to that found for the CB group, the levels of depressive symptoms in this group were higher than in the CB group for those at both low and high SC. Thus, although the nonspecific intervention also might have lessened the link between SC and depression, it did not appear to lower the levels of depressive symptoms for students in this group.

Second, the relation between individualistic achievement (IA) and depression also differed by intervention groups. In general, higher levels of IA were associated with lower levels of depressive symptoms. This effect was most pronounced for those adolescents who were in the CB intervention. The CB program likely helped to strengthen the individualistic achievement beliefs for those students who already were high in IA, and thereby further protected them from experiencing depression when they were faced with the challenges and achievement stressors normally experienced by youth.

The findings with regard to sociotropy were mixed. There was a significant main effect for connectedness such that high levels of baseline connectedness significantly predicted changes in post-intervention depressive symptoms, controlling for baseline depression on both the CES-D and CDI. Thus, adolescents who reported feeling connected with others showed lower levels of depression, regardless of the intervention condition. With regard to Neediness, there was a tendency for high levels of Neediness to predict high levels of depressive symptoms, although this relation was not as strong for those who were in the CB group. In particular, adolescents in the CB group at high levels of neediness tended to report lower depression scores than did those in the other two conditions. Again, the CB intervention might have helped teens who were high in neediness to question their beliefs about themselves in relation to others, and to gain confidence that they were a worthwhile person even if they were not liked by everyone.

Importantly, the present study did not find a significant intervention effect for the nonspecific attention control groups. Thus, despite the similar level of contact with peers and group leaders, attention from caring adults, and opportunities to discuss problems and feelings, the nonspecific control group did not affect depressive symptoms. In contrast, the CB group significantly reduced depression, particularly among those high in self-criticism, individualistic

achievement, and neediness. Thus, students in the CB group likely learned something that was above and beyond simply receiving nonspecific support from their peers and group leaders. The active ingredients responsible for this positive effect still need to be identified so that the intervention can be modified to include the most important components while simultaneously streamlining the program for more widespread dissemination.

Limitations and Future Directions

Limitations of this study provide directions for future research. First, although the sample size was modest, it might not have been big enough to find interaction effects. Second, the reasons for attrition should be explored. It is not clear if participants were missing at random or if there was a systematic difference between those who did and did not continue to participate. Third, although students were randomly assigned by class, the cell sizes were not equal across intervention conditions. Moreover, analyses should be conducted taking into consideration the nesting of the data. That is, students were nested within groups, which were nested within classes. Therefore, the assumption of independence among participants was violated in the analyses conducted here.

In addition, although finding moderators of the effects of the interventions on the outcome (i.e., depressive symptoms) is an interesting first step, the mechanisms that explain these effects still need to be identified. That is, how does the cognitive-behavioral program reduce the link between self-criticism and depression? How does individualistic achievement buffer against depression for those in the CB condition? Future studies should test both moderators and mediators of the relations between interventions and depression.

The current study measured depressive symptoms using two different self-report measures. Although continuous measures of depressive symptoms yield important findings,

assessments of clinical diagnoses also would be useful. Future studies should include both continuous and categorical measures of depression and examine the relations between them.

In summary, the present study replicated and extended the prior work of Poessel et al. (2005) by showing that the cognitive-behavioral program reduces depressive symptoms compared to a nonspecific or a no intervention control group, particularly among those high in self-criticism, high in individualistic achievement, and to a lesser extent, high in interpersonal neediness. There was no evidence that the nonspecific control condition significantly affected depression symptoms, thus the CB program may provide benefits over and above exposure to a supportive environment. Overall, these results highlight the importance of identifying individual characteristics that can alter adolescents' response to cognitive-behavioral interventions for preventing depressive symptoms. Future research should modify the CB intervention to maximize it efficacy with the different personality orientations studied here.

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Table 1. Demographic Information

	Cog-Beh	Nonspecific	Control	Whole Sample
N	56	74	87	217
% Female	55.4%	67.6%	66.7%	64.1%
Age M (SD)	14.44 (2.82)	15.04 (0.68)	14.67 (1.74)	14.43 (1.86)
Race/Ethnicity				
Caucasian	83.9% (47)	63.5% (47)	74.7% (65)	73.3% (159)
African-Am	10.7% (6)	21.6% (16)	14.9% (13)	16.1% (35)
Latino	1.8% (1)	2.7% (2)	5.7% (5)	3.7% (8)
Asian	0.0% (0)	0.0% (0)	1.1% (1)	0.5% (1)
Native Am	0.0% (0)	1.4% (1)	0.0% (0)	0.5% (1)
Mixed Race	3.6% (2)	9.5% (7)	3.4% (3)	5.5% (12)
Other	1.8% (1)	1.4% (1)	0.0% (0)	0.9% (2)

Table 2. Correlations among Study Variables

	Mean	SD	1	2	3	4	5	6	7	8
1. T1 CES-D score	17.18	10.33	1.00							
2. T1 CDI score	10.09	8.93	0.84***	1.00						
3. T1 SASC-Neediness	49.23	13.69	0.45***	0.47***	1.00					
4. T1 SASC- Connectedness	43.12	7.33	0.19**	0.06	0.60***	1.00				
5. T1SASC-Self-Criticism	25.93	7.37	0.61***	0.65***	0.73***	0.32***	1.00			
6. T1 SASC-Indiv-Achieve	39.26	6.39	-0.21***	-0.41***	-0.15**	0.34***	-0.26***	1.00		
7. T2 CES-D score	17.22	11.93	0.60***	0.61***	0.36***	0.07	0.52***	-0.24***	1.00	
8. T2 CDI score	10.73	9.80	0.63***	0.73***	0.30***	-0.05	0.48***	-0.34***	0.83***	1.00

*$p < .05$; **$p < .01$; ***$p < .001$

T1 = Time 1; T2 = Time 2; CES-D = Center for Epidemiological Studies - Depression Scale; CDI = Children's Depression Inventory;

SASC = Sociotropy Achievement Scale for Children; Indiv-Achieve = Individualistic Achievement

Figure Captions

Figure 1. Interaction of intervention condition by level of self-criticism predicting post-intervention CES-D, controlling for baseline CES-D.

Figure 2. Interaction of intervention condition by level of self-criticism predicting post-intervention CDI, controlling for baseline CDI.

Figure 3. Interaction of intervention condition by level of individualistic achievement predicting post-intervention CDI, controlling for baseline CDI.

Figure 4. Interaction of intervention condition by level of neediness predicting post-intervention CES-D, controlling for baseline CES-D.
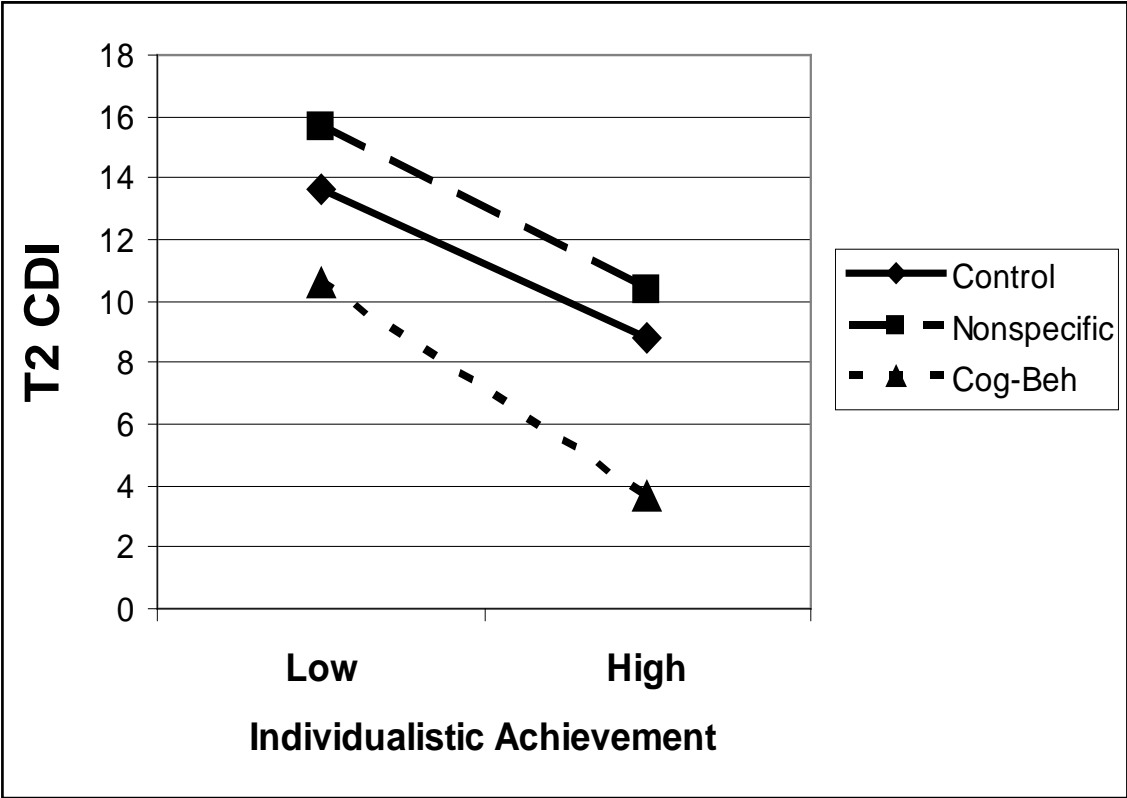
Figure 1

Figure 2

Figure 3

Figure 4