

DO INTERPERSONAL VARIABLES MODERATE OUTCOMES IN A
RANDOMIZED DEPRESSION PREVENTION TRIAL?

by

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ABSTRACT OF THE THESIS

Do interpersonal variables moderate outcomes in a randomized depression prevention trial?

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Interpersonal Psychotherapy-Adolescent Skills Training (IPT-AST) is an effective depression prevention program for youth with elevated symptoms of depression. The current study investigated interpersonal variables as moderators and predictors of depression prevention program outcomes to answer the important question of for whom these interventions were more or less effective. Youth were randomized to either IPT-AST (N = 95) or Group Counseling (GC) (N = 91), an active and stringent control group led by school counselors, as part of the Depression Prevention Initiative (DPI), the largest study of IPT-AST to date. Adolescent depressive symptoms and global functioning outcomes were measured from baseline through 6-month follow-up. At baseline, adolescents reported on family functioning, as well as conflict and support in three relationships (mother, father, and sibling), which were averaged to examine family conflict and family support. Conflict and support in individual relationships were also examined. As hypothesized, a marginal moderation effect emerged for family conflict on rates of change in depressive symptoms. At low and average levels of conflict, youth in IPT-AST reported significantly greater rates of change than youth in GC. However, the

intervention difference dissipated at high levels of conflict. This moderation effect appeared to be driven by father and sibling conflict, which were both significant moderators of change in depressive symptoms. Mother conflict, while not a significant moderator, emerged as a marginal predictor of rates of improvement in depressive symptoms. As baseline mother conflict increased, adolescents across both interventions experienced greater reductions in depressive symptoms. Father support emerged as a marginally significant moderator of global functioning, and father conflict emerged as a significant predictor of global functioning. Effects of support and conflict in each relationship are outlined in detail in the paper, and implications of the findings are discussed. There was some evidence that at low and average levels of conflict, IPT-AST may have unique gains over GC, but at high levels of conflict, a more intensive intervention may be necessary. Further exploration and replication of moderation effects could help move the field forward toward personalized prevention.

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Introduction

Adolescent depression is an important public health concern. By the end of adolescence, about 1 in 5 individuals are affected by depression (Thapar, Collishaw, Pine, & Thapar, 2012). Depression is often chronic in nature and affected individuals are likely to experience multiple episodes or experience residual symptoms of distress even after remittal (Hollon et al., 2002). Major Depressive Disorder (MDD) increases an adolescent's risk for a range of problems in the future, including interpersonal, legal, and academic difficulties, as well as risk for suicide attempts (Klein, Torpey, Bufferd, & Dyson, 2008). MDD is the leading cause of disability for individuals between the ages of 15-44 (Kessler, Chiu, Demler, & Walters, 2005). A 40 year follow up study of children with psychological disorders, including depression, showed that these adults experienced diminished educational and career accomplishments and were less likely than their peers to get married (Smith & Smith, 2010).

Given the high rates of depression in adolescence and its debilitating consequences, work on the prevention of depression has increasingly become a focus of clinical research. The multitude of biological (puberty, brain and cognitive development) and social changes make adolescence a time of great risk for depression (Thapar et al., 2012). The period of mid-to-late adolescence represents a particularly critical time of increased vulnerability to depression, specifically first episodes of depression. This risk is especially high among females, who have roughly 2.5 times greater risk of a first incidence of depression than males from childhood through early adulthood (Rohde et al., 2012). Prevalence rates of depression rise from around 5% in early adolescence to as high

as 20% by late adolescence (Thapar et al., 2012). Thus, there is a great need for efficacious preventive interventions during adolescence.

Prevention of Depression

Over the past two decades, a number of depression prevention programs for children and adolescents have been developed. There is evidence collecting that these depression prevention programs have small to moderate effects on depressive symptoms, yet there are less clear effects on diagnoses (Cuijpers, van Straten, Smit, Mihalopoulous, & Beekman, 2008; Horowitz & Garber, 2006; Merry et al., 2012; Stice et al., 2009). In one meta-analysis, Merry and colleagues (2012) found that depression prevention programs reduce depressive episodes and depression scores post-intervention and at three to nine-month follow up when compared with no intervention. In another meta-analysis, Stice and colleagues (2009) found that while the average effect sizes for reduction in depressive symptoms were small, 41% of prevention programs produced significant reductions. This finding is notable, as the percentage of programs that produced effects was greater than that of interventions for other health-related issues, such as HIV, eating disorders, and obesity (Stice et al., 2009). Stice and colleagues (2009) also found that of the 32 prevention programs they investigated, four prevention programs significantly reduced risk for future onset of MDD, including the intervention we will focus on in the current study, Interpersonal Psychotherapy-Adolescent Skills Training (IPT-AST).

The magnitude of intervention effects depends on the target population and their level of risk. The Institute of Medicine classifies three categories of preventive interventions: *universal* prevention programs include all individuals of a given population, *selective* prevention programs are administered to individuals who are

classified as “above average risk” because of a known risk factor, and *indicated* prevention programs include individuals with subclinical symptoms of the targeted disorder (Horowitz et al., 2007). While Merry and colleagues (2012) found evidence that all levels of prevention are likely to be effective in reducing depressive symptoms when compared to no intervention, effects are greater in selective and indicated programs (Horowitz & Garber, 2006; Stice et al., 2009). Selective and indicated prevention programs have demonstrated comparable effects in meta-analyses (Cuijpers et al., 2008; Horowitz & Garber, 2006).

One promising indicated prevention program is IPT-AST (Young & Mufson, 2003), based on Interpersonal Psychotherapy for Depressed Adolescents (IPT-A; Mufson, Dorta, Moreau, & Weissman, 2004). IPT-AST focuses on the interpersonal context in which depression occurs. Given the bidirectional link between mood and relationships (an individual’s mood may affect his relationships, which in turn affect his mood), IPT-AST aims to prevent depressive symptoms by improving adolescents’ communication skills and promoting positive relationships (Young & Mufson, 2003). Adolescents use the group as an “interpersonal laboratory” where they learn skills and practice through role-plays and activities in session and then are asked to apply these skills to improve their relationships.

IPT-AST has demonstrated promising results in three efficacy studies (Horowitz, Garber, Ciesla, Young, & Mufson, 2007; Young, Mufson, & Davies, 2006; Young, Mufson, & Gallop, 2010). In the first efficacy study, adolescents with elevated depressive symptoms showed improvement in depressive symptoms and global functioning from baseline to post-intervention in IPT-AST, and these differences were significantly greater

compared to adolescents in usual school counseling (SC). These differential intervention effects were also found at three and six-month follow-up. A trend was also found toward higher onset of depression diagnoses in the SC condition than in IPT-AST over the follow-up period (Young et al., 2006). In the second efficacy study, which was also administered to an indicated population, adolescents in IPT-AST reported greater rates of change in depressive symptoms and global functioning than adolescents in SC from baseline to post-intervention. Adolescents in IPT-AST reported significantly fewer diagnoses of depression at 6-month follow-up than their peers in SC; however, this difference disappeared at 12-month follow-up (Young et al., 2010). Horowitz and colleagues (2007) conducted a universal efficacy study comparing the effects of IPT-AST and a cognitive behavioral depression prevention program, Coping with Stress (CWS), for 9th grade adolescents. Though there were no differences on the main outcomes between the two interventions, students in both interventions had lower levels of depressive symptoms at post-intervention than those in a no intervention control group, and the difference between the control and intervention groups was the greatest for adolescents who had the highest depressive symptoms at baseline.

Moderators of Interventions for Depression

Given the encouraging results on the efficacy of prevention programs, it is important to examine moderators of intervention outcomes to answer the important question of for whom an intervention is more or less effective (Garber, 2008; Gillham, Shatte, & Reivich, 2001). Identifying moderators may allow for personalization of interventions, matching individuals to the interventions that will be most beneficial, and may help to maximize the benefits of future prevention efforts. Knowledge about

moderators can also inform researchers and clinicians about the limits of interventions. By identifying individuals for whom the intervention was least effective, modifications can be made to address limitations (Garber, 2008), and researchers may become aware of any subgroups for whom the intervention may have iatrogenic effects (Gillham, Shatte, & Reivich, 2001).

In the depression prevention and treatment literature, demographic variables (i.e., gender, ethnicity, age) have received the most attention as moderators of intervention outcomes. Gender has been extensively studied as a moderator of depression prevention programs. Although the findings have been mixed, there is some evidence that programs were more effective when delivered to samples with a higher portion of females than males (Stice et al., 2009; Horowitz & Garber, 2006). The meta-analysis by Stice and colleagues (2009) also found evidence that prevention programs were more effective for samples with more participants from ethnic minority groups. Greater effects have also been demonstrated in prevention programs for older adolescents as opposed to younger adolescents (Horowitz & Garber 2006; Stice et al., 2009), possibly because of an elevated risk at this developmental period (Hankin et al., 1998) or because older adolescents are better able to understand and apply the principles learned in prevention programs (Stice et al., 2009).

Risk status variables, while less studied in the literature, are critically important to investigate as moderators of prevention programs. Prior work has begun to look at the moderating effects of risk factors such as comorbid anxiety, personality characteristics, symptom severity, parental depression levels, and interpersonal functioning on depression interventions. Children with higher levels of anxiety have been found to

experience greater reduction in depressive symptoms from preventive interventions in some studies (Hains & Ellmann, 1994; Lowry-Webster et al., 2001), but not others (Young et al., 2012). Parental depression has also been found to moderate the effects of preventive interventions; youth with actively depressed parents have been found to benefit less from such programs (Beardslee et al., 2013; Garber et al., 2009). Horowitz et al. (2007) found that sociotropy (defined by the authors as the extent to which a person's sense of self is dependent on his relationships) and achievement orientation moderated intervention effects in their study comparing IPT-AST, CWS, and a no intervention control, such that higher levels of baseline sociotropy and achievement orientation predicted lower levels of depressive symptoms in the adolescents in the IPT-AST group, only. Finally, depressive symptom severity at baseline has been shown to moderate interventions outcomes such that adolescents with high baseline symptoms received the most benefit from prevention programs (Horowitz et al., 2007).

More recently, studies have looked at different aspects of interpersonal functioning as moderators of depression interventions. An extensive body of research has examined the effects of interpersonal functioning on adolescent depression. Prior work has shown that positive interactions with family, including perceived social support, is linked to emotional well-being, while negative interactions, such as conflict, are a risk factor for depressive symptoms in adolescence (Allison & Schultz, 2003; Bagwell et al., 2005; Epkins & Heckler, 2011; Rubin et al., 2004). Conflict has been studied as both a predictor and a moderator of treatment interventions for depression, though few studies have looked at conflict as a predictor or moderator of prevention programs. Within the depression treatment literature, there is accumulating evidence that high levels of parent-

child conflict predict poorer response to cognitive behavioral and pharmacological treatments (Asarnow et al., 2009; Birmaher et al. 2000; Rengasamy et al., 2013; Spirito et al., 2009); although other studies have found no or mixed effects of parent-child conflict on treatment outcomes (e.g., Brent et al., 1998; Curry et al., 2006; Feeny et al., 2009).

While high conflict in an adolescent's relationships may predict worse outcomes in cognitive behavioral treatment of depression, the same may not hold true for prevention and treatment interventions with interpersonal components. In one study of a depression prevention program, Gillham and colleagues (2000), found that children who came from highly conflictual homes fared better in an intervention that included sections on coping with parental conflict than one that did not. Young and colleagues (2009) found that baseline mother-child conflict moderated intervention outcomes in their first study comparing IPT-AST and SC. Within the subgroup of adolescents who had high mother-child conflict at baseline, IPT-AST was significantly more effective at reducing symptoms of depression than usual school counseling. For adolescents with low mother-child conflict at baseline, there was no significant difference between the effects of IPT-AST and SC on symptom outcome.

Gunlicks-Stoessel and colleagues (2010) found similar results when investigating the moderating effects of conflict on treatment outcomes in a depression treatment study of IPT-A. Adolescents in the IPT-A group who reported high baseline levels of conflict with mothers and social dysfunction with friends showed greater reductions in depressive symptoms when compared with adolescents in usual care. The effect sizes of these findings were medium to large (Gunlicks-Stoessel et al., 2010). Taken together, these findings suggest that interpersonally oriented interventions, which target problematic

relationship patterns, may be particularly effective for youth who are experiencing interpersonal issues. However, this needs to be replicated in future studies.

Unlike most studies that have focused exclusively on parent-child conflict as a predictor or moderator of intervention outcomes, the Gunlicks-Stoessel et al. (2010) study examined whether social functioning in the family and peer domains moderated outcomes. Although family functioning did not moderate outcomes, social functioning with friends was a significant moderator of effects in the IPT-A treatment study. The documented link between social support and depression (Allison & Schultz, 2004; Eberhart & Hammen, 2009; Rubin et al., 2004; Stice, Ragan, & Randall, 2004), points to the importance of examining the effects of social support and functioning on the outcomes of our intervention. Several studies specifically looking at social support across parents and peers as a moderator of cognitive behavioral prevention programs have failed to find moderation effects (Briere, Rohde, Shaw, & Stice, 2014; Gau, Stice, Rohde, & Seeley, 2012). However, to date, social support has not been looked at as a moderator of interpersonal prevention programs such as IPT-AST. Given that IPT-AST aims to increase social support as a mechanism for change in depressive symptoms, we believe it is important to investigate the effects of social support in the current study.

The Current Study

IPT-AST is an effective depression prevention program for youth with elevated symptoms of depression (Young et al., 2015; Young et al., 2006; Young et al., 2010). The current study builds on prior analyses which examined the main outcomes from the Depression Prevention Initiative (DPI), the largest IPT-AST efficacy study to date (Young et al., 2015). DPI compared IPT-AST to counselor-led groups matched on

duration and frequency of sessions in a sample of 186 adolescents with elevated depressive symptoms. While both conditions demonstrated significant improvements, adolescents in IPT-AST showed significantly greater improvements in self-reported depressive symptoms and evaluator-rated global functioning than adolescents in group counseling (GC) from baseline through six-month follow up.

While we know that IPT-AST has benefits over group counseling, the next step in maximizing the effects of IPT-AST is to identify the subgroups of youth who may benefit the most from IPT-AST (Garber, 2008; Gillham, Shatte, & Reivich, 2001). The Young et al. (2009) study demonstrated that youth experiencing high conflict with mothers might benefit in unique ways from IPT-AST. The current study aims to replicate the findings on the moderating effects of mother-child conflict on IPT-AST and expand these findings to other relationships (father-child conflict, sibling-child conflict, and average family conflict) and to examine whether aspects of interpersonal functioning (social support and family functioning) predict or moderate outcomes. Notably, the depression treatment and prevention literature has focused almost exclusively on the impact of the mother-child relationship on intervention outcomes. However, it is important to determine whether it is specifically mother-child conflict which impacts intervention effects, or whether other family relationships or other interpersonal constructs may also be important to consider as we move toward personalized prevention approaches.

Father and sibling relationships have been implicated in adolescent well-being and depression. For instance, low levels of father-support have been shown to predict increases in emotional and behavioral problems (Keijsers et al., 2009; Yeung & Leadbeater, 2010). Similarly, high conflict in sibling relationships can confer risk for

psychological well-being (Sherman et al., 2006) and is related to depressive symptoms (Kim, McHale, Crouter & Osgood, 2007). However, to date, no studies have investigated the moderating effects of father-adolescent or sibling-adolescent relationships in depression prevention studies. The current study will add to the literature by looking at support and conflict in father-adolescent and sibling adolescent relationships, as well as mother-adolescent relationships. In addition, the current study will examine family level variables (family functioning, family support, and family conflict) to determine whether these variables impact intervention effects.

Method

Participants and Procedures

Youth whose parents gave signed consent and personally gave signed assent participated in the study. One hundred eighty-six participants were randomized to either IPT-AST (N = 95) or GC (N = 91) as part of the DPI project, the largest study of IPT-AST to date (Young et al., 2015). IPT-AST and GC were conducted in ten middle and high schools throughout New Jersey. Adolescents completed assessments at baseline, post-intervention, and at 6, 12, 18, and 24-months post-intervention. At each assessment, adolescents met with a trained clinical evaluator and completed a diagnostic interview and self-report forms. Evaluators were blind to random assignment. Participants were compensated \$20 at baseline, and \$20 per follow-up. This paper analyzed data collected through the 6-month follow-up assessment.

Interventions

IPT-AST. IPT-AST is a manual based intervention (Young, Mufson, & Schueler, 2013) consisting of two individual pre-group sessions, 8 group sessions, and an

individual or dyadic (adolescent and parent) mid-group session. Four individual booster sessions were also conducted after conclusion of the group. In the pre-group sessions, the therapist and adolescent identified the adolescent's goals for the group. These goals either focused on particular relationships, such as communicating more effectively with a parent, or more general interpersonal goals, such as sharing one's feelings with others or making new friends. The group focused on psychoeducation and interpersonal skill-building. The psychoeducation portion of group defined the concept of prevention, educated about depression and its symptoms, and discussed the relationship between mood and interpersonal interactions. Next, adolescents learned communication strategies such as using "I statements," and practiced these strategies through group activities and role-plays in session. Group members were then asked to apply the skills learned to relationships in their lives outside of group. There were 18 IPT-AST groups, ranging in size from 3-7 youth. All groups were conducted by co-leaders. In most groups, co-leaders consisted of a clinical psychologist and a graduate student in clinical psychology.

Group Counseling (GC). Group counseling was chosen as the comparison group because it reflected the type of groups run in schools. Although groups typically run in these schools had shorter and less frequent sessions, counselors agreed to hold eight weekly group sessions equal in length to the IPT-AST groups in that school. Counselors also agreed to see adolescents for a pre-group session, a mid-group session in which they could invite their parents in, and four booster sessions. No limits were given on the techniques to be used in GC groups in order to have GC reflect practices as normally delivered in schools. Some counselors ran manual-based, structured groups while others ran groups that were more flexible. There were 16 GC groups, ranging in size from 2-8

youth. The majority of groups were run by a single group leader.

Measures

Network of Relationships Inventory-Revised (NRI-R; Furman & Buhrmester, 1985). The NRI consists of 13 items that assess perceived quality of relationships, including both positive and negative interactions, in six domains: same-sex friend, other sex-friend, boyfriend or girlfriend, mother, father, and sibling. For the current study, we used only the data on family relationships. An example item from the NRI is *“How much do you and this person get upset or mad at each other?”* Participants answered on a five-point Likert scale from *Little or None* to *The Most*. In total, there were seven positive relationship questions and six negative relationship questions. Answers for each relationship were summed into two subscales (positive and negative). Thus, there is a positive interaction and negative interaction score for each relationship. In addition, prior studies have created composite positive and negative interaction scores for relationship domains by averaging ratings across different relationships. For example, Hazel and colleagues (2014) created a total index of parent relationship quality by first having youth report separately on the extent to which their relationship with each parent was characterized by positive qualities. These items were summed to form a positive relationship quality scale for each parent, and then averaged across both parents to form a total index of parent support. For the purposes of our study, we created a composite score for positive and negative interactions across the three family relationships (father, mother, sibling). The composite score is the average across the relationships. For adolescents without siblings or who did not report on a mother or father figure, the composite score was the average of whichever relationships were reported. In the

remainder of this paper, we refer to the positive interactions subscale as support and the negative interactions subscale as conflict. Prior studies have shown the NRI to be a valid measure of relationship quality among adolescents (Furman & Buhrmester, 1992) and to have good internal consistency and test-retest reliability (Furman & Buhrmester, 1985).

The NRI asked the adolescent to identify his/her father, mother, and sibling figures. Some adolescents reported on individuals other than their biological parents. Out of 186 adolescents, 181 reported on a biological mother, four reported on other figures (one stepmother, one aunt, two grandmothers), and one adolescent did not report on a mother figure. One hundred and forty-five adolescents reported on a biological father, while 35 reported on other figures (21 stepfathers, three on mother's partners, one second mother, two uncles, five grandfathers); nine adolescents did not report on a father figure. One hundred and seventy adolescents reported on a sibling, while 16 did not. The relevant NRI questions in the support and conflict subscales are listed in the Appendix.

Social Adjustment Scale-Self Report (SAS-SR; Weissman, Orvaschel, & Padian, 1980). The SAS-SR is a self-report measure that assesses social functioning and has four subscales: friends, school, family, dating, and a total scale score. The family functioning subscale assessed functioning in relationships with family members. An example item from the SAS-SR is: *“During the last two weeks, have you been thinking that your family let you down or has been unfair to you?”* Scores on each of the scales range from 1 to 5, with higher scores indicating greater dysfunction. The SAS-SR has demonstrated sensitivity to changes in a patient's clinical status (Achard et al., 1994) as well as sensitivity to intervention effects in a previous study of IPT-A (Mufson,

Weissman, Moreau & Garfinkel, 1999). The relevant SAS-SR questions for family functioning are listed in the Appendix.

Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977).

The CES-D is a 20-item measure that assesses depressive symptoms over the past week. An example item from the CES-D is, *“I was bothered by things that don’t usually bother me.”* Participant responses range from 0 to 3, from *“Rarely or none of the time”* to *“Most or all of the time.”* Scores range from 0-60, with higher scores indicating higher symptomatology. The CES-D has been shown to have high internal consistency, reliability, and validity (Roberts, Andrew, Lewinsohn, & Hops, 1990). The CES-D, one of the primary outcome measures of the study, is included in the Appendix.

Children’s Global Assessment Scale (CGAS; Shaffer et al., 1983). The CGAS is a clinician-rated measure of global functioning, based on functioning in school, at home, and with peers and family members. Scores on the CGAS range from 0-100, with lower scores indicating lower functioning. Scores over 70 indicate normal adjustment with possible minor impairment, while scores below 50 indicate moderate to severe impairment. The CGAS has been shown to have good inter-rater reliability (Shaffer et al., 1983) and to be sensitive to intervention effects in prior studies of IPT-AST (Young, Mufson, & Davies, 2006; Young, Mufson, & Gallop, 2010). Functioning as measured by the CGAS is referred to as global functioning throughout this paper. The CGAS, one of the primary outcomes of the DPI study, is included in the Appendix.

Data Analysis

In the current study, we built on prior analyses that investigated the main outcomes of DPI using hierarchical linear modeling (HLM) (Young et al., 2015). Young

and colleagues (2015) found that IPT-AST had benefits over GC in rates of change of depressive symptoms (CES-D) and global functioning (CGAS), the two primary outcome measures, from baseline through six-month follow up. The current study expanded on their model by examining interpersonal moderators of these effects. Cohen's (1988) power tables in combination with Aiken and West (1991) provide guidance on the estimation of power for the above analyses with baseline clinical measures. Given our sample size of 186, we had 80% power to detect a medium effect size for a univariate assessment of moderation.

In the examination of moderation effects, interpretations are simplified when the respective moderator is a categorical measure such as gender or race. In such cases, the effect of interest can be graphically presented separately for each intervention by moderator classification. A significant moderation is evident graphically when the difference between intervention arms varies over the categories of the moderation. In our moderation assessments, the potential moderators were continuous measures rather than categorical measures. If significant, this implies the difference in the intervention effect varies over the range of the potential moderator. To graphically understand and interpret the results, we produced model-based estimates of the rate of change of depressive symptoms (CES-D) and global functioning (CGAS) for each intervention arm, but at three levels of each moderator at the following location on its continuous scale: one standard deviation (SD) below the average, the average, and one SD above average. We refer to the levels of the moderator as low, average, and high, respectively. The use of model-based estimates allowed us to graphically present the results, which guided our interpretation and understanding of the potential effect.

The current study had two aims: (1) Assess how baseline family functioning, family support, and family conflict moderated rates of change in depressive symptoms and global functioning through six-month follow-up; (2) Explore how support and conflict in individual family relationships (i.e., mother, father, and sibling) moderated rates of change in depressive symptoms and global functioning through six-month follow-up. If we failed to find moderation effects, we further explored whether any of these variables predicted outcomes, regardless of intervention condition.

Aim 1. To achieve the first aim, we examined subscales from the SAS-SR and NRI as possible moderators, and used the CES-D and CGAS as outcome measures. We investigated the effects of three possible moderators: family functioning (using the SAS-SR family subscale score), family support (using the family positive interaction subscale from the NRI), and family conflict (using the family negative interaction subscale from the NRI). To investigate moderation effects, the first step was to rescale the subscales from the SAS-SR and the NRI as deviations from the overall mean using grand mean centering. Centering in HLM was used to provide stability to model estimation and to provide a meaningful zero point (Blanton & Jaccard, 2006; Enders & Tofighi, 2007). Because our outcome measures (CES-D, CGAS) were continuous, we implemented a 3-level hierarchical linear model (HLM) to investigate differences in rates of change from baseline through 6-month follow up across the interventions. For the CES-D outcome measure, the screening CES-D was included as a covariate in all analyses. HLM models require multivariate normality of the residuals. As such, a square root transformation was necessary for the CES-D. The CGAS did not require transformation to guarantee

normality of the residuals, as per the analysis in the main outcomes paper (Young et al., 2015).

A 3-level HLM can accommodate for multiple levels of clustering in the data (i.e., repeated measures per adolescent and multiple adolescents within each group in each intervention). Group was treated as a random effect in the second level and school was held as a fixed effect in all analyses. Moderation effects were then investigated by expanding on the prior model, including the interaction of the effect of intervention with the proposed moderators. In the HLM model, the focus was on change over time, corresponding to a time by intervention interaction that quantified if there was a difference in rate of change between the interventions. In this model, the moderation assessment was made by including the three-way interaction of the proposed moderator by time by intervention. The model included all lower order terms (i.e., main effects and two-way interactions) of the three-way interaction. The proposed moderators were considered significant if the interaction term was significant (Kraemer et al., 2002) corresponding to a significance level below a set alpha level of $\alpha = 0.05$. In the case where a moderator's significance level lies between 0.05-0.10, corresponding to a marginal effect, we graphed the relationship to understand the direction of the effect. If the moderator was not significant, we investigated the lower order terms to assess for prediction effects. Predictor assessments were made by removing the nonsignificant three-way interaction from the model but including the two-way interaction of the proposed predictor by time. As with the assessment of moderation, the proposed predictors were considered significant if the interaction of predictor by time was significant corresponding to a set alpha level of $\alpha = 0.05$ (Kraemer et al., 2002).

Aim 2. To achieve the second aim, we divided the NRI family subscale into three individual relationships (mother, father, and sibling) to investigate six possible moderators of CES-D and CGAS outcomes. We investigated the moderating effects of support and conflict in mother-adolescent, father-adolescent, and sibling-adolescent relationships to see whether any of the individual relationships were particularly impactful as moderators. In the case of non-significant moderation, we investigated the lower order terms to examine whether any of these individual relationship variables predicted rates of change in depressive symptoms or global functioning. These analyses were considered exploratory in nature; therefore, no adjustments were made for multiple comparisons per Rothman (1990).

Hypotheses

Aim 1. Based on the existing literature, we predicted that family conflict would moderate intervention outcomes such that higher levels of family conflict at baseline would predict greater reductions in depressive symptoms and greater improvements in global functioning in the IPT-AST group as compared to GC. Given the limited literature examining family support and family functioning in prior depression intervention studies, we did not have specific hypotheses about whether these interpersonal variables would moderate outcomes.

Aim 2. Based on the prior literature examining the moderating effects of mother-child conflict on IPT-AST, we predicted that high baseline conflict with mothers would moderate intervention outcomes. Specifically, we predicted that adolescents in IPT-AST with high mother child-conflict would have significantly greater rates of change in depressive symptoms and global functioning than adolescents in GC. Given the link

between father-child relationships and depression, we predicted that father-child conflict would also moderate outcomes such that high conflict at baseline would predict better outcomes in the IPT-AST group than adolescents in GC. Given the limited literature on sibling relationships, we did not have specific hypotheses about the effects of conflict in sibling-adolescent relationships. Finally, given the limited literature on individual aspects of social support as moderators of intervention outcome, the remaining analyses were exploratory. As such, we had no a priori hypotheses about whether mother support, father support, or sibling support would moderate outcomes.

Results

As shown in Table 1, neither the independent variables (conflict, support, and functioning) nor the dependent variables (depressive symptoms and global functioning) differed across interventions at baseline. Correlations were also examined amongst the seven potential moderators at baseline. As anticipated, we found that many of the variables (i.e., family conflict and family support) had significant correlations ranging from small to large size effects, from $r=.16$ to $r=.83$. These correlations suggested that while the constructs were related, each moderator quantified a distinct construct. As such, each was modeled univariately because of the potential overlap in the explanation of the variance in the outcome measures. The correlations are displayed in Table 2.

We found a significant decrease in depressive symptoms between the screening and the baseline evaluation which occurred on average 7.37 ($SD = 1.66$) weeks later. Therefore, we included screening CES-D scores as a covariate in our model examining depressive symptom outcomes, as was done in the DPI main outcomes study (Young et al., 2015). The changes in CES-D scores from screening to baseline were significantly

correlated with family, father, and mother conflict, as well as family functioning ($r = -.16$ to $r = -.39$), but not with sibling conflict or any of the support measures (Table 3). Looking at the two intervention conditions separately, family conflict and mother conflict were significantly correlated with the change in CES-D scores from screening to baseline in the GC condition, but not in the IPT-AST condition.

Effects on Depression Symptoms

Table 4 summarizes the family-level and individual relationship moderators and predictors of depressive symptoms. Significant results are discussed further below and are graphically depicted in the accompanying figures.

Family-Level Variables. We first examined possible moderation effects of family conflict, family support, and family functioning. We found a marginal moderation effect of family conflict on depressive symptoms as measured by the CES-D ($F = 3.45$, $p = .06$). Rates of change at varying levels of the moderator are illustrated in Figure 1. At low levels of family conflict, rates of change were significantly greater in IPT-AST than GC ($p < .05$). At average levels of family conflict, rates of reduction were marginally greater for adolescents in IPT-AST than adolescents in GC ($p < .10$). However, at high levels of family conflict, rates of reduction were not different for IPT-AST and GC ($p > .10$).

Family support was not found to moderate depressive symptom outcomes ($F = .15$, $p > .10$) across time. Family functioning also did not moderate depressive symptom outcomes ($F = .56$, $p > .10$). Finally, none of the family level variables predicted rates of change in depressive symptoms from baseline through the 6-month follow-up. In other words, none of the predictor by time interactions was significant.

Individual Relationships. Next, we examined the individual family relationship variables for moderation effects. We found that conflict with fathers moderated the intervention effects on depressive symptoms ($F = 4.010, p < .05$). As illustrated in Figure 2, at low levels of father conflict, adolescents in IPT-AST had greater rates of reduction in depressive symptoms than adolescents in GC ($p < .01$). At average levels of father conflict, adolescents in IPT-AST also had marginally greater rates of reduction in depressive symptoms than adolescents in GC ($p < .10$). Rates of reduction were not different across the two interventions for adolescents with high levels of father conflict ($p > .10$). Father social support did not predict or moderate intervention effects on depressive symptom outcomes.

Contrary to hypotheses, conflict with mothers did not moderate the intervention effects on depressive symptoms. Rather, conflict with mothers was a marginal predictor ($F = 2.78, p < .10$) of rates of change in depressive symptoms (see Figure 3). Hence, across both interventions, there were higher reductions in depressive symptoms for youth with high levels of conflict than low and average levels of conflict. Mother social support did not predict or moderate intervention effects on depressive symptoms.

Evidence of moderation was found for conflict with siblings on depressive symptoms ($F = 4.08, p = 0.04$). At low levels of sibling conflict, adolescents in IPT-AST had significantly greater rates of reduction in depressive symptoms than adolescents in GC ($p < .05$). At average levels of sibling conflict, adolescents in IPT-AST had marginally greater rates of reduction than adolescents in GC ($p < .10$). At high levels of sibling conflict, there was no difference ($p > .10$) between the two interventions in rates

of change (Figure 4). Sibling social support did not predict or moderate intervention effects on depressive symptom outcomes.

Effects on Global Functioning Outcomes

Table 5 summarizes the family-level and individual relationship moderators and predictors of rates of change in global functioning.

Family-Level Variables. Family conflict, family support, and family functioning did not moderate or predict rates of change in global functioning.

Individual Relationships. Father conflict was a significant predictor of rates of change in global functioning ($F = 4.63, p = .03$). Higher conflict with fathers predicted reduced rates of improvement in global functioning for youth across interventions (Figure 5).

Father support was a marginal moderator of global functioning outcomes ($F = 3.22, p = 0.07$). At low and average levels of father support, the global functioning of youth in IPT-AST improved at significantly greater rates than youth in GC ($p < .01$ at low levels of support, $p < .05$ at average levels of support). At high levels of father support, the difference between the interventions dissipated ($p > .10$) (Figure 6).

No other individual family relationship (i.e., mother conflict, mother support, sibling conflict, sibling support) was found to be a significant moderator or predictor of rates of change in global functioning (Table 5).

Discussion

This study examined family-level and individual relationship moderators and predictors of rates of change in depressive symptoms and global functioning in a randomized controlled depression prevention trial. Of the relationship variables

examined, conflict at both the family and individual levels emerged as the most significant moderator and predictor of rates of change in depressive symptoms. There were fewer predictors or moderators of global functioning outcomes. Specifically, father conflict was a significant predictor of rate of change regardless of intervention and father support was a marginal moderator of rate of change in global functioning. With the exception of father support, there was no evidence that support (at either the family or individual levels) or family functioning moderated or predicted rates of change in this prevention trial. The implications of each of the findings will be discussed further below.

The Impact of Conflict on Depressive Symptoms

As hypothesized, we found a marginal moderation effect of family conflict on rates of change in depressive symptoms, although the direction of moderation was different from what we expected. Of note, GC and IPT-AST demonstrated different patterns in rates of reduction in depressive symptoms across varying levels of family conflict. In IPT-AST, rates of reduction in depressive symptoms decreased as conflict increased, contrary to what was found in the prior IPT-AST study (Young et al., 2009). For GC youth, rates of reduction in depressive symptoms were significantly greater for youth with high versus low family conflict ($p < .05$), also contrary to prior research in which high conflict in family relationships generally predicted worse outcomes in non-interpersonal depression interventions (Asarnow et al., 2009; Birmaher et al. 2000; Rengasamy et al., 2013; Spirito et al., 2009). These divergent patterns of change across the two interventions resulted in significant differences in rates of change at low and average levels of family conflict, with IPT-AST youth having greater rates of reduction

than did GC at these levels. However, the difference in rates of change in depressive symptoms between the two interventions dissipated for youths at high levels of conflict.

There are a number of possible explanations for the lack of differences in rates of change at high levels of family conflict. One possible explanation may be that at low and average levels of family conflict, IPT-AST was able to provide youth with the tools and strategies that they needed to handle mild to moderate conflict well enough to improve their mood. At high levels of conflict, a more intensive intervention may be necessary to sustain the higher rates of improvement in IPT-AST. This may be particularly the case since high family conflict was significantly positively correlated with screening and baseline CES-D scores and negatively correlated with change scores, indicating that youth in this subgroup had less spontaneous improvement relative to the other conflict groups (see the correlations in Table 2 and Table 3).

This explanation, however, is not in line with findings from the previous IPT-AST study (Young et al., 2009) in which youth with high conflict in IPT-AST experienced greater gains than youth with high conflict in usual school counseling and youth with low conflict in both interventions. Importantly, the prior study looked exclusively at mother-child conflict, whereas this study examined conflict at the family-level which may contribute to the discrepant findings. This possibility is explored further in the discussion about the differential findings in mother, father and sibling conflict. In addition, the current study used the NRI to measure conflict, whereas the prior study used the Conflict Behavior Questionnaire (CBQ) (CBQ; Robin & Weiss, 1980), which is a more in depth assessment of conflict and negative communication with mothers and fathers. The use of

different measures may have also contributed to the discrepancy in the conflict findings between the current study and the study by Young and colleagues (2009).

The lack of significant differences in rates of change amongst high conflict youth may also be attributed to the fact that the GC group performed differently than was expected, reporting greater rates of change in the high conflict group than the low or average conflict groups. To examine this unexpected finding, we looked at the mean CES-D scores across the three conflict groups at each time point to ensure that our interpretation of the moderation effects was grounded in the data. Although the high conflict group in GC showed the highest rates of change in depressive symptoms, these youth still reported considerable depressive symptoms at post-intervention as compared to youth in GC with low or average levels of conflict. Thus, the greater rates of change in the high conflict youth may be attributable to there being greater room for improvement in this sub-group, given high conflict was associated with high depressive symptoms which remained stable from screening to baseline.

Alternatively, there may have been something unique about the structure or content of GC groups that was particularly impactful for youth from high conflict families. Counselors were asked to report on techniques used in GC by completing the Therapy Procedures Checklist (TPC; Weersing, Weisz, & Donenberg, 2002) at mid and post-intervention. They reported using a variety of evidence-based techniques which have been shown to be effective in preventing depression, including teaching problem-solving and decision making strategies, and discussing how to recognize and modify maladaptive thoughts. Thus, GC leaders may have provided the adolescents with key skills that were helpful in decreasing depression symptoms, particularly for this sub-group with elevated

symptoms and conflictual family relationships. In addition, counselors may have incorporated interpersonal components that had specific benefits for adolescents experiencing conflict. Unfortunately, the TPC did not assess interpersonal techniques; however, counselors were asked to rank the three primary topics that were discussed in each session. Family was consistently a primary topic, discussed in 56.4% (with a range of 28.9-73.3%) of all GC sessions. Given these rankings, it seems possible that GC may have targeted conflict in family relationships, which in conjunction with the cognitive techniques, may have resulted in significant improvements in depressive symptoms in adolescents in high conflict families. We are in the process of coding the GC sessions to gain a better understanding of which techniques worked well, especially for youth with high conflict.

We next investigated the relationship of conflict and depressive symptoms in the three family relationships (father, mother, and sibling) to see whether any of the individual relationships were particularly impactful as moderators. Both father conflict and sibling conflict moderated rates of change in depressive symptoms, following the same pattern as overall family conflict. At low and average levels of conflict in father and sibling relationships, IPT-AST youth reported greater rates of change than GC youth, but these differences dissipated at high levels of conflict. However, mother conflict predicted rates of change regardless of intervention condition, with greater conflict resulting in greater rates of change across intervention.

The finding of moderation for fathers and siblings and prediction for mothers is partly explained by the differential effects of high conflict across the three relationships by intervention. In IPT-AST, youth experienced slower rates of reduction at high versus

low levels of conflict with fathers and siblings, while they experienced greater rates of reduction at high versus low levels of conflict with mothers. In GC, however, youth experienced consistently higher rates of reduction at high rather than low levels of conflict across all three relationships (fathers, mothers, and siblings). This suggests that there is something unique about how mother-adolescent conflict is addressed in IPT-AST as compared to father conflict or sibling conflict, whereas in GC the same pattern emerged across relationships.

The finding that youth in IPT-AST with high levels of maternal conflict had marginally greater reductions in depressive symptoms than youth with low levels of conflict (Figure 3) is in line with the Young et al. (2009) study, in which youth in IPT-AST with high mother-child conflict had greater rates of improvements in depressive symptoms than youth with low conflict. However, contrary to the control group in the prior study, youth in GC with high mother-child (as well as father-child and sibling-child) conflict also demonstrated significant improvements in depressive symptoms. The fact that higher mother-child conflict predicted greater rates of change in depressive symptoms across interventions suggests unique differences in the effects of mother conflict in the treatment versus prevention of depression, as well as in how GC performed as compared to other interventions in the literature. Conflict with mothers and other family members has typically been found to be a predictor of negative outcomes in the treatment of depression, especially with cognitive-behavioral or pharmacological treatments (Asarnow et al., 2009; Birmaher et al. 2000; Rengasamy et al., 2013; Spirito et al., 2009). As discussed, there may have been something unique about GC groups in the current study that contributed to this difference. It is also possible that high conflict does

not necessarily mean worse outcomes within a prevention context, in the same way that it does for adolescents who are experiencing clinical levels of depression. This will need to be explored further in future prevention studies.

Unlike in cognitive-behavioral or pharmacological studies, there is prior evidence that youth with higher conflict with mothers had better outcomes in treatment and preventive interventions with interpersonal components, which specifically targeted conflictual or problematic relationships (i.e., Gillham et al., 2000; Gunlicks-Stoessel et al., 2010; Young et al., 2009). In light of these prior studies, the finding that high mother-child conflict predicted greater change in depressive symptoms within the IPT-AST arm was not surprising. At the start of IPT-AST groups, participants set interpersonal goals and group was spent targeting these goals. For many adolescents, these goals specifically targeted mother-child conflict. Youth in IPT-AST were also given the opportunity to invite parents into their mid-group sessions to utilize the interpersonal skills taught in group to resolve a conflict or communicate their needs to a parent. Of the 40 adolescents in IPT-AST who brought a parent in for the mid-group session, 28 attended the mid-group session with their mothers, one attended with a father, and 11 attended with both parents. Therefore, more than one-third of youth in IPT-AST had the opportunity in session to work on issues with their mothers under the guidance of a group leader. For youth whose parents did not attend, half of mid-group sessions still involved a discussion about the adolescent's relationship with his/her mother (while 17% discussed relationship with a father or both parents, and 7.5% discussed a sibling). As such, it was fitting that youth with high conflict with mothers would benefit from IPT-AST, given this relationship was often a focus of the intervention.

In prior studies of IPT-AST, conflict with fathers and siblings had not been studied due to lack of data on these relationships. The current dataset allowed us to explore these relationships and discover a novel finding. Contrary to what we hypothesized based on the interpersonal nature of IPT-AST, youth in IPT-AST with high conflict with fathers and siblings experienced slower rates of improvement than those with low conflict in IPT-AST, while youth in GC consistently experienced greater rates of improvement at high levels of conflict. As previously discussed, fathers and siblings were less likely than mothers to be targeted within IPT-AST. The father and sibling findings, as compared to the findings with mother-child conflict, suggest that IPT-AST may have been most helpful for the relationship that it was targeting (often mother) but youth may have a difficult time generalizing to other highly problematic relationships that were not specifically addressed in session. Within GC, the techniques utilized (e.g., how to change maladaptive thoughts) may have been uniformly helpful, particularly for adolescents with stressful events (such as conflict) to apply them to. It is also possible that IPT-AST sensitized youth to the connection between mood and relationships. Youth in IPT-AST who had high conflict with fathers or siblings (but did not specifically address these relationships in session) may have been particularly aware of this conflict which may have led to lesser gains from the intervention than those either with lower conflict or those who specifically targeted these relationships.

The Impact of Conflict on Global Functioning

Family conflict did not moderate or predict rates of change in global functioning. While we hypothesized that youth in IPT-AST with higher family conflict would have greater rates of improvement on global functioning than youth in GC, we failed to find

differences between the two groups. To date, this is the first study of IPT-AST that investigated the effects of family conflict on global functioning outcomes. Several prior treatment studies have found that conflict with family members predicted, though did not moderate, global functioning as measured by the CGAS. For example, in the Treatment for Adolescents with Depression Study (TADS) (March et al., 2004), high conflict with parents as reported by mothers predicted worse outcomes on global functioning as measured by the CGAS, though these outcomes did not differ by intervention. In a study of CBT versus family therapy and supportive therapy, both parent and self-reported parent-child conflict predicted slower rates of improvement in functioning (Birmaher et al., 2000). The previous two studies investigated treatment interventions, as compared to the current study investigating two preventive interventions. Thus, the discrepant findings may be explained by the differences in global functioning between prevention and treatment samples. The majority of youth in the current study began with good global functioning, so there may have been less room for the impact of interpersonal relationships on rates of change than there were in depression treatment studies where functioning was more impaired. Similarly, given that youth started with generally good global functioning but elevated depressive symptoms, this may be why we saw evidence of conflict predicting and moderating change in depressive symptoms but not change in global functioning. Given the incongruity in findings, further research is needed to understand the relationship between conflict and global functioning in the treatment versus prevention of depression in adolescents.

While family conflict did not predict or moderate global functioning outcomes, we further investigated for possible moderation or prediction in individual relationships.

We found evidence that conflict with fathers uniquely predicted slower rates of improvement in global functioning across intervention, in line with prior findings that high conflict with parents predicted worse functioning outcomes (i.e. Asarnow et al., 2009; Birmaher et al. 2000; Feeny et al., 2009; March et al., 2004; Rengasamy et al., 2013; Spirito et al., 2009). The current finding suggests that relationships with fathers, which are less frequently studied in the literature, may be driving the effects of parent conflict seen in other studies. This points to the importance of specifically examining father-child conflict in future intervention studies, as it seems to have an important impact on both global functioning and depression outcomes.

The Role of Social Support and Family Functioning

Family support was not found to moderate or predict outcomes for either depressive symptoms or global functioning. Given the limited literature examining family support in preventive interventions, we did not have any a priori hypotheses about these effects. However, our results are in line with previous research that investigated the moderating effects of social support on cognitive behavioral prevention programs using the NRI. In these studies, perceived support from both parents and peers failed to moderate outcomes (Briere, Rohde, Shaw, & Stice, 2014; Gau, Stice, Rohde, & Seeley, 2012). These prior studies and our own findings suggest that it was conflict, rather than social support, that impacted intervention outcomes.

Although there were no significant effects of support at the family level, father support emerged as a marginal moderator of global functioning. At low and average levels of support, youth in IPT-AST experienced greater rates of improvement in global functioning than youth in GC. This difference dissipated at high levels of support. This

suggests that IPT-AST may be particularly effective for youth with more distant father relationships, but that at higher levels of support both IPT-AST and GC are effective. The proposed mechanisms of IPT-AST include reducing conflict and increasing support in relationships. For youth with low father support, IPT-AST may be particularly helpful as the intervention helps teens improve these relationships or find support from other people in the teens' lives. Because father support was only a marginal moderator of rates of change in global functioning, these findings require replication and should be interpreted cautiously. Further, the differential findings for conflict (where high conflict meant less change) and support (where low support meant more change) suggest that the effects of IPT-AST on conflict and support may be independent. This is worth exploring in mediator analyses.

The finding that father support, but not mother support or family support, moderated changes in global functioning highlights the importance of understanding the unique effects of individual family relationships. While mothers have long been the focus of research, these results point to the importance of investigating fathers in future depression intervention work. Further, the differential patterns for father conflict and father support, as well as the differential effects on depression as compared to global functioning, point to the need to continue to examine support and conflict across mothers, fathers, and siblings.

Family functioning did not moderate or predict outcomes for either depressive symptoms or global functioning. While we did not have prior hypotheses about the effects of family functioning, these results were in line with the limited previous research examining the moderating effects of family functioning in studies comparing

interpersonal interventions to usual care. Gunlicks-Stoessel and colleagues (2010) also failed to find moderation effects of family functioning in their study which compared IPT-A and usual care (TAU) for the treatment of adolescent depression. However, unlike the current study, the authors did find prediction effects; lower family functioning predicted slower improvement in depressive symptoms. Once again, this difference may be explained by the preventive versus treatment nature of the interventions across the previous and current study. However, further studies on the moderating effects of family functioning in IPT-AST are needed to understand the reason for this discrepancy.

Although family functioning was not a moderator or predictor of outcomes, there was evidence that the variable was significantly associated with baseline depressive symptoms and global functioning, as well as many of the measures of conflict and support (Table 2). Given that higher scores on the family functioning score meant greater dysfunction, the positive association with baseline depressive symptoms and negative association with global functioning meant that youth with higher dysfunction had higher depression scores and lower global functioning at the start of the intervention. Family functioning was also significantly negatively associated with changes in depressive symptoms from screening to baseline, which meant that youth with greater dysfunction had less spontaneous improvement from screening to baseline. These associations highlight the importance of the family functioning construct and emphasize the need for further research to understand the role of family functioning in adolescent depression.

The SAS-SR (our measure of family functioning) asked adolescents six questions assessing functioning in family relationships: two questions asked about fairness, one about family worries, one about whether the adolescent had wanted to do the opposite of

what their parents asked them to do, and two questions about whether the adolescent had arguments with his/her parents over the last two weeks. As such, the SAS-SR encompasses several different constructs that broadly define functioning within the family. Two of the questions (acting to make the parent angry and worries about family) focus more on externalizing/internalizing symptoms of the adolescent than functioning of the family unit, while the other questions broadly target support and conflict. While the SAS-SR is a valid measure of functioning in the different domains it measures, the breadth of family variables that this measure assesses may be too vast to provide insight into moderation or prediction effects of outcome variables. Taken together, these findings suggest that there may be something unique about conflict which is not adequately captured in a more global index of family functioning that measures conflict as well as support.

Limitations

The current study has several important limitations. First, the information gathered about GC group sessions is not sufficient to make interpretations about session content. It will be important to gain a better understanding of the structure of these groups, which techniques were utilized, and which relationships were discussed. It is also necessary to further explore which unique ingredients from these groups had the strongest effects. This may help to answer the important question of whether greater attention to the specific conflictual relationships may lead to better outcomes in depressive symptoms, or whether the effects of GC on depressive symptoms in high conflict families are attributable to other factors, such as greater room for improvement. We are in the

process of coding GC sessions to better understand the specific topics discussed per session to address this question.

The measures used in the current study limit the comparisons that can be made to previous studies. While the NRI was able to provide unique information that had not been previously analyzed about fathers and siblings, it has a different set of questions than those typically used when assessing conflict (i.e., the CBQ). The CBQ was collected as a part of DPI and future studies can investigate whether similar patterns emerge for parental conflict on adolescent outcomes. Relatedly, this was one of the first studies to look at support and conflict at a family level. Additionally, randomization was not stratified on the NRI measures. Our investigations at baseline did not indicate any on-average differences across the interventions (see Table 1). Therefore, the observed balance at randomization protected against confounding in the assessment of intervention differences due to baseline differences. Nonetheless, the baseline levels of the NRI and family functioning measures related to baseline depression and global functioning ($r=.05$ to $r=.56$). While the assessment of moderation focuses on how the on-average difference in rate of change between interventions vary over the range of the potential moderation, the magnitude of the rates of change on outcome may be related to the initial levels of the NRI measures, regardless of intervention. Hence higher family conflict was associated with greater depressive symptoms and lower functioning at baseline, providing this portion of the sample more room to improve over time. As such, the within-intervention interpretations may be related to baseline differences and should be interpreted with caution. Lastly, although the majority of youth reported on their biological mothers, many did not report on a biological father. In addition, a subset of youth had no siblings.

Future studies should investigate the effects that family composition may have on intervention outcomes, and whether perceived support and conflict has differential effects based on the type of relationship the adolescent has with the individual.

Summary and Conclusions

Taken together, the findings from the current study suggest that factors in individual family relationships have unique effects on intervention outcomes that may be masked when looking at global indices of parental conflict or family conflict. The current study also points to the importance of examining distinct interpersonal constructs in that conflict acted differently than support and functioning. Finally, the findings differed when looking at depressive symptom outcomes as compared to global functioning. More work is needed to understand the differential effects of interpersonal variables across the two interventions. Specifically, it will be important to elucidate the content of GC sessions to better interpret the current findings.

Given the results of mother conflict and the focus of the mother-adolescent relationship in IPT-AST, it is plausible that interpersonal interventions have the greatest benefit when providing more intensive interventions to target specific conflictual relationships. On the other hand, the techniques used in GC appear to be generalizable across the three family relationships. Future studies should seek to understand the mechanisms of action for both GC and IPT-AST. Further, future IPT-AST studies may want to specifically target conflict in father or sibling relationships to better understand whether the intensity of the intervention for specific relationships affects outcomes, or if the mother-adolescent relationship has unique effects on outcomes regardless of the intervention's focus. Depending on these findings, it may be necessary to modify the

intervention to permit targeted work on a variety of conflictual relationships. The current study also highlights the importance of studying relationships with fathers and siblings. The current findings on father support and conflict further suggests that fathers are an important avenue of research to be explored in the depression intervention literature.

These results are promising: across both interventions, youth experienced improvements in depressive symptoms and global functioning outcomes. Future work is needed to continue to understand the subgroups of youth that would most benefit from each intervention as we move toward personalized prevention programs.

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Table 1: Baseline Measures

Measure	IPT-AST Mean (SD)	GC Mean (SD)	<i>p value</i>
Screening CES-D	24.41 (6.88)	23.14 (6.37)	.19
Baseline CES-D	15.07 (8.65)	15.51 (8.52)	.73
Baseline CGAS	67.55 (5.24)	67.44 (4.98)	.89
Family Functioning	1.98 (.860)	1.97 (.702)	.95
Family Conflict	13.66 (4.01)	13.78 (4.29)	.84
Family Support	24.76 (5.44)	24.61 (5.07)	.84
Mother Support	26.48 (6.43)	26.27 (5.64)	.81
Mother Conflict	13.83 (5.92)	13.49 (6.08)	.70
Father Support	23.67 (7.47)	23.76 (6.87)	.94
Father Conflict	11.97 (5.46)	12.93 (6.08)	.27
Sibling Support	23.87 (6.17)	23.68 (6.64)	.84
Sibling Conflict	15.60 (6.68)	15.23 (6.34)	.71

Table 2: Correlations for Moderators and Screening/Baseline Outcome Measures

	Mother Support	Mother Conflict	Father Support	Father Conflict	Sibling Support	Sibling Conflict	Family Support	Family Conflict	Family Functioning	Screening CESD	Baseline CESD	Baseline CGAS
Mother Support	1	-.40**	.53**	-.03	.47**	-.00	.83**	-.24**	-.52**	-.10	-.19*	.17*
Mother Conflict	-.40**	1	-.25**	.25**	-.14	.16*	-.33**	.71**	.66**	.15*	.42**	-.25**
Father Support	.53**	-.25**	1	-.36**	.34**	.03	.81**	-.28**	-.41**	-.08	-.14	.10
Father Conflict	-.03	.25**	-.36**	1	-.03	.08	-.20**	.65**	.34**	.09	.24**	-.10
Sibling Support	.47**	-.14	.34**	-.03	1	-.32**	.76**	-.26**	-.21**	-.11	-.05	.13
Sibling Conflict	-.00	.16*	.03	.08	-.32**	1	-.11	.65**	.09	.09	.12	-.04
Family Support	.83**	-.33**	.81**	-.20**	.76**	-.11	1	-.33**	-.49**	-.10	-.17*	.18*
Family Conflict	-.24**	.71**	-.28**	.65**	-.26**	.65**	-.33**	1	.54**	.14	.39**	-.21**
Family Functioning	-.52**	.66**	-.41**	.34**	-.21**	.09	-.49**	.54**	1	.18*	.56**	-.32**
Screening CESD	-.10	.15*	-.08	.09	-.11	.09	-.10	.14	.18*	1	.28**	-.14
Baseline CESD	-.19*	.42**	-.14	.24**	-.05	.12	-.17*	.39**	.56**	.28**	1	-.44**
Baseline CGAS	.17*	-.25**	.10	-.10	.13	-.04	.18*	-.21**	.32**	-.14	-.44**	1

*Correlation significant at .05, **correlation significant at .01

Table 3: Correlation of Change Scores on CES-D from Screening to Baseline and Moderators

	Overall	GC	IPT-AST
Mother Support	.08	.16	.06
Mother Conflict	-.28**	-.38**	-.17
Father Support	.07	.12	.02
Father Conflict	-.16*	-.20	-.13
Sibling Support	-.03	.01	-.06
Sibling Conflict	-.05	-.18	.08
Family Support	.08	.15	.03
Family Conflict	-.26**	-.37**	-.14
Family Functioning	-.39**	-.46**	-.31**

*Correlation significant at .05, **correlation significant at .01

Table 4: Effects of Variables on Depressive Symptom Outcomes

Potential Moderator	Effect on Baseline Symptoms		Prediction effect		Moderation effect	
	F	p	F	p	F	p
Family Functioning	39.55	<0.001	1.09	0.296	0.56	0.455
Mother Conflict	18.98	<0.001	2.78	0.096	0.36	0.548
Mother Support	1.73	0.191	0.01	0.921	0.66	0.416
Father Conflict	5.83	0.0170	0.03	0.866	4.01	0.046
Father Support	0.28	0.599	0.52	0.473	0.91	0.340
Sibling Conflict	3.17	0.077	0.08	0.778	4.08	0.044
Sibling Support	0.00	0.945	0.02	0.888	0.94	0.332
Family Conflict	20.80	<0.001	0.80	0.370	3.45	0.064
Family Support	0.74	0.389	0.13	0.719	1.49	0.223

Table 5: Effects of Variables on Global Functioning Outcomes

	Effect on Baseline Symptoms		Prediction effect		Moderation effect	
	F	p	F	p	F	p
Family Functioning	11.07	0.001	0.24	0.624	0.11	0.740
Mother Conflict	4.31	0.040	0.01	0.911	0.36	0.550
Mother Support	2.02	0.157	0.56	0.457	0.10	0.747
Father Conflict	0.10	0.755	4.63	0.033	0.03	0.870
Father Support	0.00	0.976	0.03	0.867	3.22	0.074
Sibling Conflict	1.10	0.300	0.00	0.978	0.50	0.480
Sibling Support	1.53	0.218	0.49	0.485	0.13	0.716
Family Conflict	3.00	0.085	1.18	0.279	0.07	0.785
Family Support	1.35	0.247	0.16	0.693	0.14	0.705

Table 6: Simple Slopes for Depressive Symptoms

For the respective columns ‘***’ indicates where the pairwise contrasts between IPT-AST and GC are highly significantly different ($p < 0.01$); ‘**’ indicates where the pairwise contrasts between IPT-AST and GC are significantly different ($p < 0.05$); and ‘#’ indicates where the pairwise contrasts between IPT-AST and GC are marginally different ($p < 0.10$)

Family Functioning (SAS)	IPT-AST	Std Er	GC	Std Er
Low #	-0.20	0.06	-0.06	0.06
Average #	-0.21	0.04	-0.11	0.04
High	-0.21	0.05	-0.16	0.05
Family Conflict	IPT-AST	Std Er	GC	Std Er
Low *	-0.23	0.06	-0.03	0.06
Average #	-0.20	0.04	-0.10	0.04
High	-0.17	0.06	-0.18	0.05
Family Support	IPT-AST	Std Er	GC	Std Er
Low	-0.16	0.06	-0.12	0.06
Average #	-0.20	0.04	-0.10	0.04
High *	-0.25	0.06	-0.07	0.06
Father Conflict	IPT-AST	Std Er	GC	Std Er
Low **	-0.26	0.06	-0.04	0.06
Average #	-0.20	0.04	-0.09	0.04
High	-0.14	0.06	-0.15	0.05
Father Support	IPT-AST	Std Er	GC	Std Er
Low	-0.16	0.06	-0.10	0.06
Average #	-0.21	0.04	-0.10	0.04
High *	-0.26	0.06	-0.09	0.06
Mom Conflict	IPT-AST	Std Er	GC	Std Er
Low #	-0.17	0.06	-0.04	0.06
Average #	-0.20	0.04	-0.10	0.04
High	-0.23	0.05	-0.17	0.06
Mom Support	IPT-AST	Std Er	GC	Std Er
Low	-0.18	0.05	-0.12	0.06
Average #	-0.20	0.04	-0.10	0.04
High #	-0.22	0.05	-0.07	0.06
Sibling Conflict	IPT-AST	Std Er	GC	Std Er
Low **	-0.24	0.06	-0.02	0.06
Average #	-0.19	0.04	-0.09	0.04
High	-0.14	0.05	-0.15	0.06
Sibling Support	IPT-AST	Std Er	GC	Std Er
Low	-0.17	0.06	-0.12	0.06
Average#	-0.19	0.04	-0.09	0.04
High#	-0.22	0.06	-0.05	0.06

Table 7: Simple Slopes for Global Functioning Outcomes

For the respective columns ‘**’ indicates where the pairwise contrasts between IPT-AST and GC are highly significantly different ($p < 0.01$); ‘*’ indicates where the pairwise contrasts between IPT-AST and GC are significantly different ($p < 0.05$); and ‘#’ indicates where the pairwise contrasts between IPT-AST and GC are marginally different ($p < 0.10$)

Family Functioning (SAS)	IPT-AST	Std Er	GC	Std Er
Low	1.91	0.26	2.17	0.26
Average	1.80	0.18	2.15	0.18
High	1.69	0.26	2.13	0.25
Family Conflict	IPT-AST	Std Er	GC	Std Er
Low	1.91	0.26	1.91	0.26
Average	1.80	0.19	1.80	0.19
High	1.70	0.26	1.70	0.26
Family Support	IPT-AST	Std Er	GC	Std Er
Low	2.25	0.25	1.80	0.27
Average	2.15	0.18	1.80	0.19
High	2.05	0.25	1.80	0.27
Father Conflict	IPT-AST	Std Er	GC	Std Er
Low	2.39	0.23	2.04	0.24
Average	2.12	0.16	1.81	0.16
High	1.85	0.25	1.58	0.21
Father Support	IPT-AST	Std Er	GC	Std Er
Low **	2.34	0.19	1.58	0.20
Average *	2.16	0.12	1.79	0.12
High	1.98	0.20	2.01	0.20
Mom Conflict	IPT-AST	Std Er	GC	Std Er
Low	2.08	0.26	1.88	0.26
Average	2.15	0.18	1.78	0.19
High	2.21	0.25	1.69	0.27
Mom Support	IPT-AST	Std Er	GC	Std Er
Low	2.21	0.25	1.93	0.27
Average	2.15	0.18	1.79	0.19
High	2.09	0.25	1.64	0.28
Sibling Conflict	IPT-AST	Std Er	GC	Std Er
Low	2.17	0.28	1.70	0.28
Average	2.07	0.19	1.81	0.20
High	1.98	0.27	1.91	0.29
Sibling Support	IPT-AST	Std Er	GC	Std Er
Low	2.22	0.28	1.85	0.27
Average	2.07	0.19	1.80	0.20
High	1.92	0.28	1.76	0.28

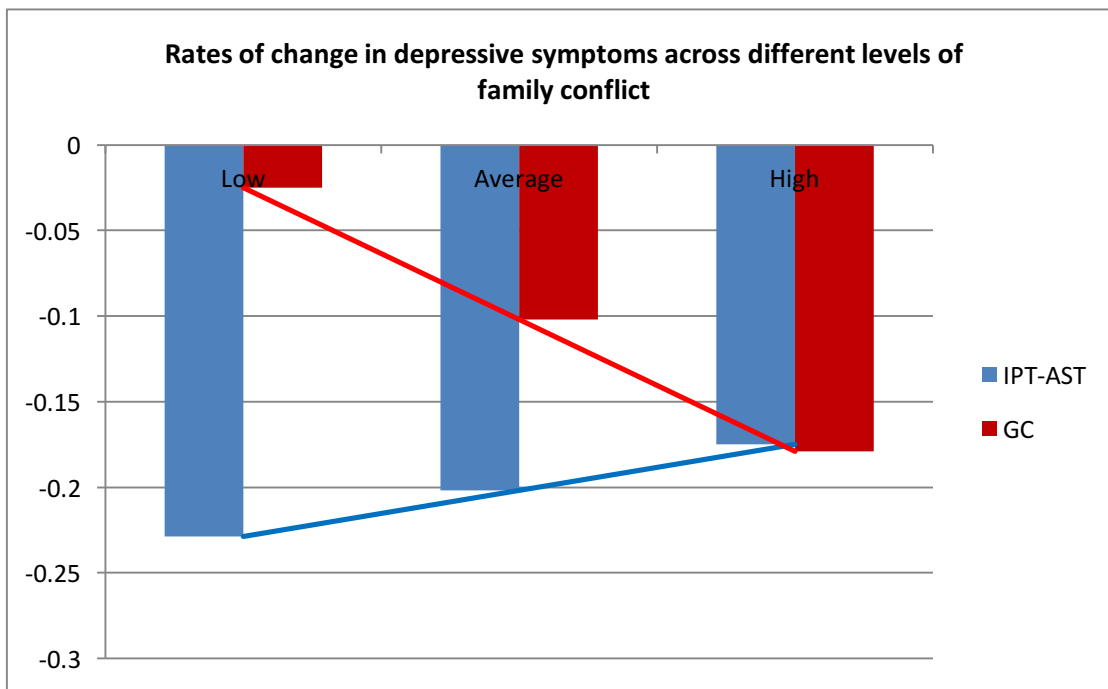
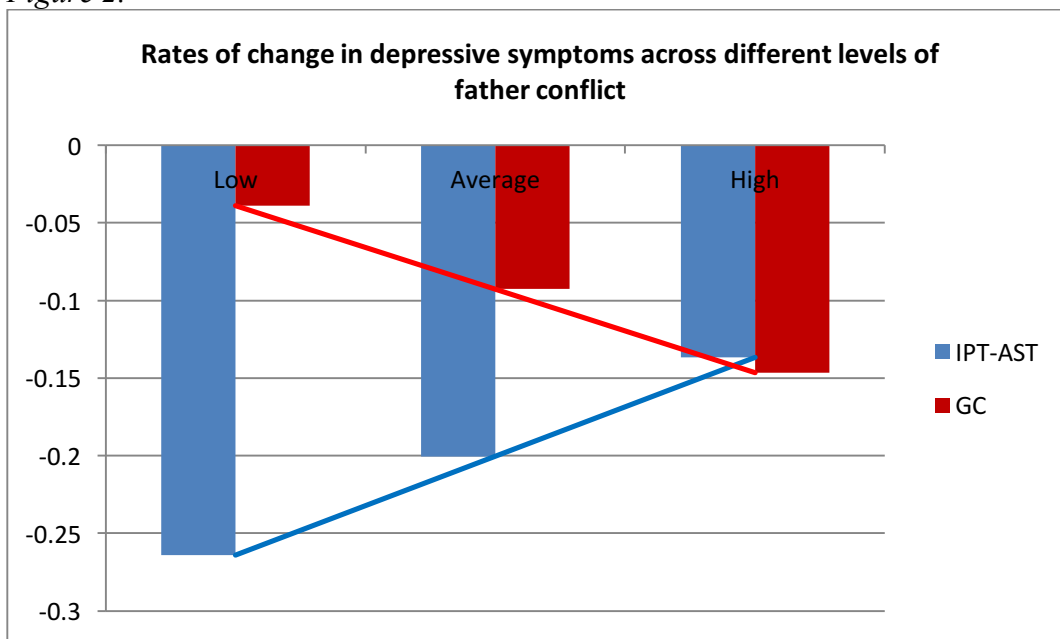
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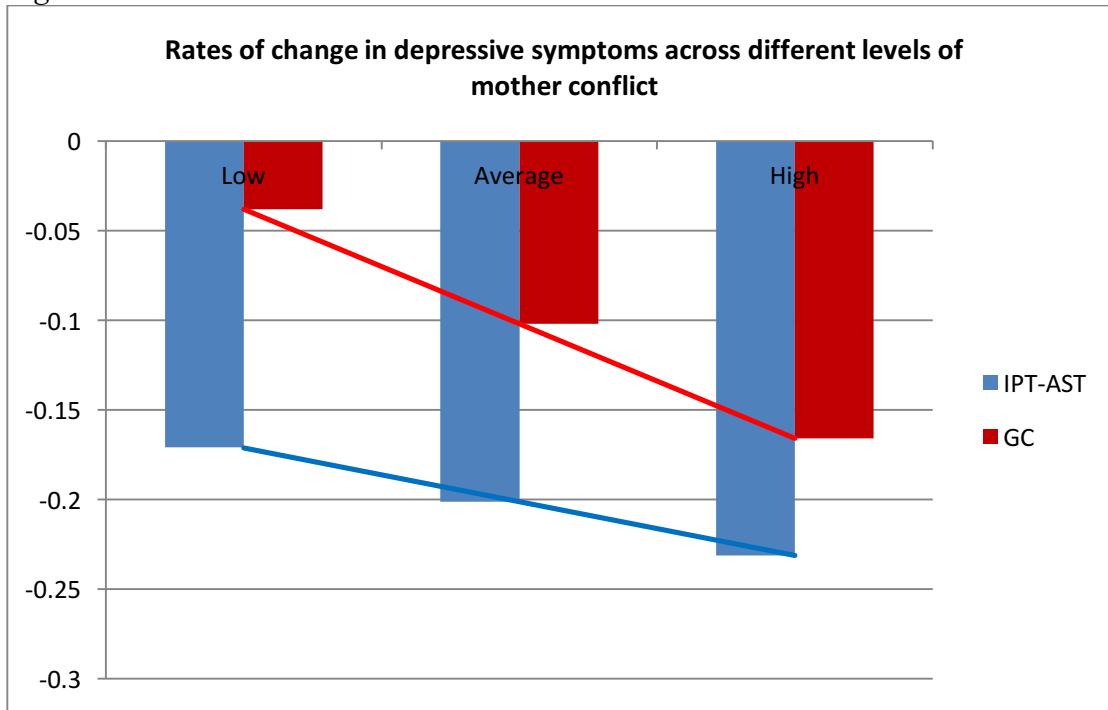
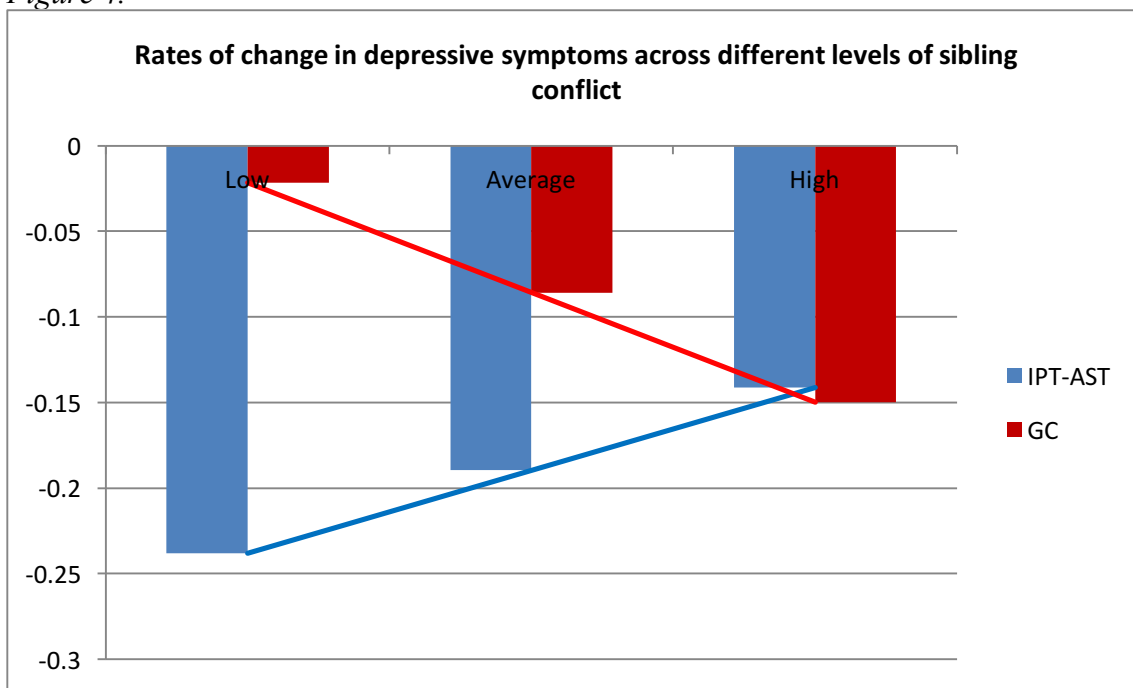
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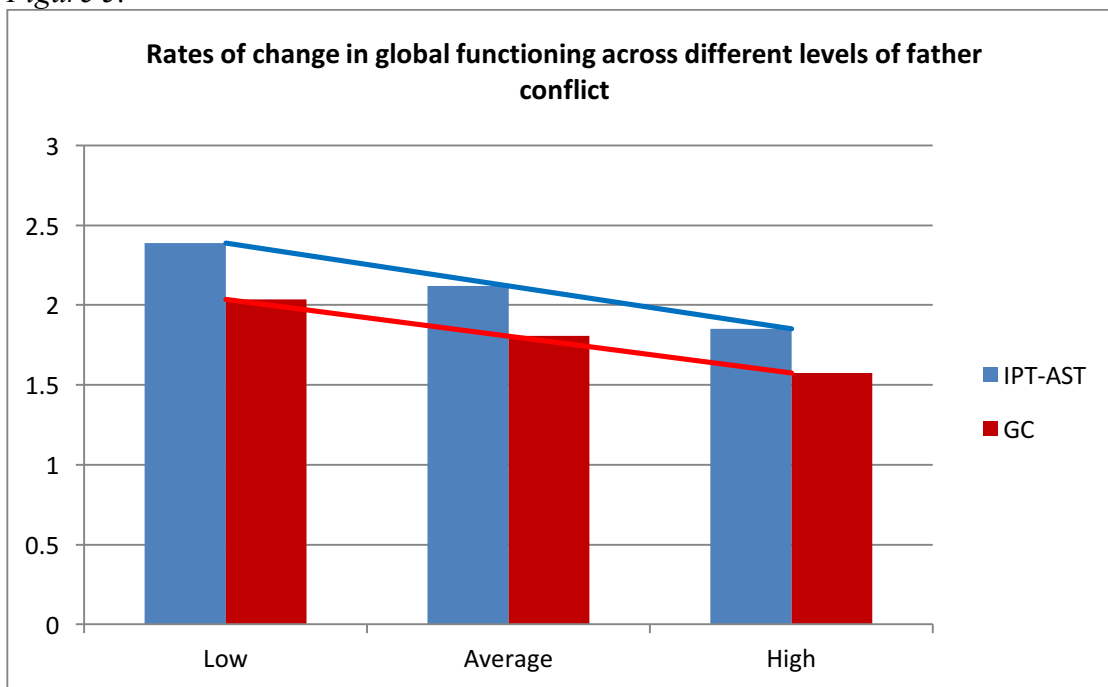
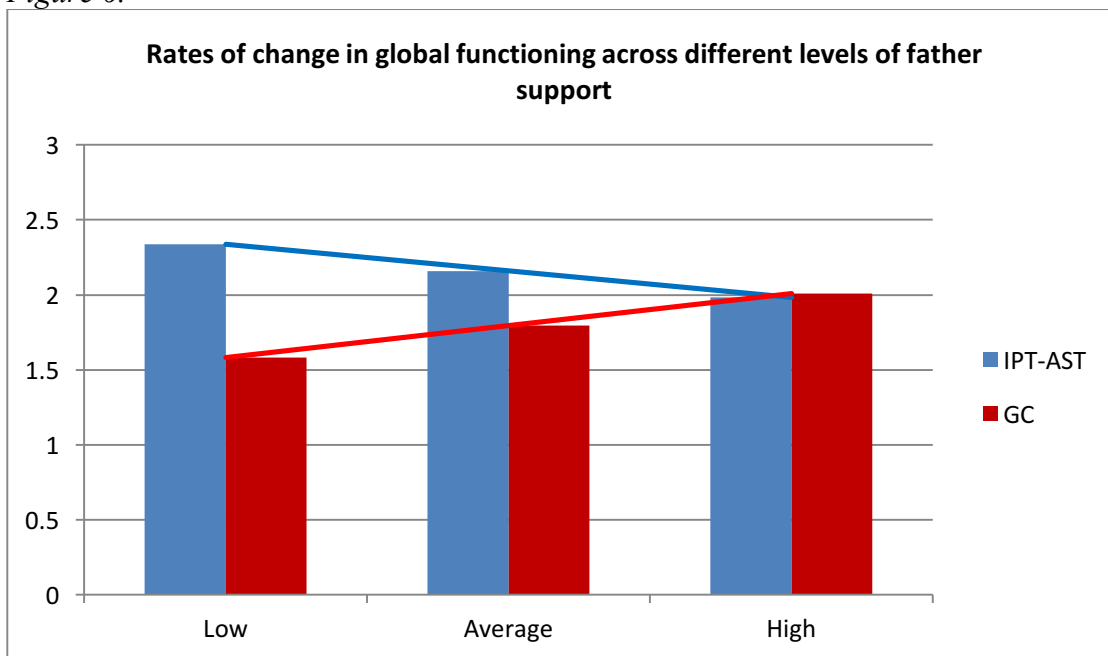


Figure 6.



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Appendix A. Social Adjustment Scale-Self Report Family Subscale (SAS-SR).

Instructions

We are interested in finding out how you have been doing in the LAST TWO (2) WEEKS. We would like you to enter the number of the answer that best describes your behavior in school, with friends, and at home for the LAST TWO (2) WEEKS.

SCHOOL

1. _____ How many days did you miss in the last 2 weeks?

- 1 = No days missed
- 2 = A few days missed
- 3 = I missed about half the time
- 4 = I missed more than half the time but did make at least one day.
- 5 = I did not go to classes at all
- 8 = I did not have school; can't answer

2. _____ Have you been able to keep up with all your classwork in the last 2 weeks?

- 1 = I did my work very well
- 2 = I did my work well but had some problems
- 3 = I needed help with my work and did not do well about half the time
- 4 = I did my work poorly most of the time
- 5 = I did my work poorly all of the time
- 8 = I did not attend school; can't answer

3. _____ During the last 2 weeks, have you been ashamed of how you do your schoolwork?

- 1 = I never felt ashamed
- 2 = Once or twice I felt ashamed
- 3 = About half the time I felt ashamed
- 4 = I felt ashamed most of the time
- 5 = I felt ashamed all of the time
- 8 = I did not have schoolwork; can't answer

4. _____ Have you had any arguments with kids at school in the last 2 weeks?

- 1 = I had no arguments and got along very well
- 2 = I usually got along well but had some problems
- 3 = I had more than one argument
- 4 = I had many arguments
- 5 = I was constantly in arguments
- 8 = I did not attend school; can't answer

SCHOOL continued

5. _____ Have you felt unhappy at school during the last 2 weeks?

- 1 = I never felt unhappy
- 2 = Once or twice I felt unhappy
- 3 = Half the time I felt unhappy
- 4 = I felt unhappy most of the time
- 5 = I felt unhappy all of the time
- 8 = I did not attend school; can't answer.

6. _____ Have you found your schoolwork interesting in these last 2 weeks?

- 1 = My work was almost always interesting
- 2 = Once or twice my work was not interesting
- 3 = Half the time my work was not interesting
- 4 = Most of the time my work was not interesting
- 5 = My work was never interesting
- 8 = I did not have schoolwork; can't answer

FRIENDS

7. _____ How many friends have you seen or spoken to on the telephone in the last 2 weeks?

- 1 = Nine or more friends
- 2 = Five to eight friends
- 3 = Two to four friends
- 4 = One friend
- 5 = No friends

8. _____ Have you been able to talk about your feelings and problems with at least one friend during the last 2 weeks?

- 1 = I can always talk about my feelings
- 2 = I usually talk about my feelings
- 3 = About half the time I felt able to talk about my feelings
- 4 = I usually was not able to talk about my feelings
- 5 = I was never able to talk about my feelings
- 8 = I have no friends; can't answer

9. _____ How many times in the last 2 weeks have you been with other kids? For example:
visited friends, gone to _____ movies, bowling, invited friends to your
home?

- 1 = More than three times
- 2 = Three times
- 3 = Twice
- 4 = Once
- 5 = None

10. _____ How much time have you spent on hobbies or other activities during the last 2 weeks? For example: Arts and crafts, sports, reading?

- 1 = I spent most of my spare time on hobbies almost everyday
- 2 = I spent some spare time on hobbies some of the days
- 3 = I spent a little spare time on hobbies
- 4 = I usually did not spend any time on hobbies but did watch T.V.
- 5 = I did not spend any spare time on hobbies or watching T.V.

11. _____ Have you had arguments with your friends in the last 2 weeks?

- 1 = I had no arguments and got along very well
- 2 = I usually got along very well but had some arguments
- 3 = I had more than one argument
- 4 = I had many arguments
- 5 = I was always in arguments
- 8 = I have no friends; can't answer

12. _____ If your feelings were hurt by a friend during the last 2 weeks, how badly did you take it?

- 1 = It did not bother me or it did not happen
- 2 = I got over it in a few hours
- 3 = I got over it in a few days
- 4 = I got over it in a week
- 5 = It will take me a long time to feel better
- 8 = I have no friends; can't answer

13. _____ Have you felt shy or nervous with people in the last 2 weeks?

- 1 = I always felt o.k.
- 2 = Sometimes I felt nervous but could relax after a while
- 3 = About half the time I felt nervous
- 4 = I usually felt nervous
- 5 = I always felt nervous
- 8 = I was never with people; can't answer

14. _____ Have you felt lonely and wished for more friends during the last 2 weeks?

- 1 = I have not felt lonely
- 2 = I have felt lonely only a few times
- 3 = About half the time I felt lonely
- 4 = I usually felt lonely
- 5 = I always felt lonely and wished for more friends

FRIENDS continued

15. _____ Have you felt bored in your spare time during the last 2 weeks?

- 1 = I never felt bored
- 2 = I usually did not feel bored
- 3 = About half the time I felt bored
- 4 = Most of the time I felt bored
- 5 = I was constantly bored

FAMILY

16. _____ Have you had arguments with your parents in the last 2 weeks?

- 1 = We always got along very well
- 2 = We usually got along very well but had some arguments
- 3 = I had more than one argument with at least one parent
- 4 = I had many arguments
- 5 = I was always in arguments
- 8 = No contact with my parents in the last 2 weeks; can't answer

17. _____ Have you been able to talk about your feelings and problems with your parents in the last 2 weeks?

- 1 = I can always talk about my feelings with my parents
- 2 = I usually can talk about my feelings
- 3 = About half the time I felt able to talk about my feelings
- 4 = I usually was not able to talk about my feelings
- 5 = I was never able to talk about my feelings
- 8 = No contact with my parents in the last 2 weeks; can't answer

18. _____ Have you wanted to do THE OPPOSITE of what your parents wanted in order to make them angry during the past 2 weeks?

- 1 = I never wanted to do the opposite of what my parents wanted
- 2 = Once or twice I wanted to do the opposite of what my parents wanted
- 3 = About half the time I wanted to do the opposite
- 4 = Most of the time I wanted to do the opposite
- 5 = I always wanted to do the opposite
- 8 = No contact with my parents in the last 2 weeks; can't answer

19. _____ Have you been worried about things happening to your family without good reason in the last 2 weeks?

- 1 = I have not worried without reason
- 2 = Once or twice I worried
- 3 = About half the time I worried
- 4 = Most of the time I worried
- 5 = I have worried the entire time

FAMILY continued

20. _____ During the past 2 weeks, have you been thinking that you have let your family down or have been unfair to them at any time?

- 1 = I never felt that I let them down
- 2 = I usually did not feel that I let them down
- 3 = About half the time I felt that I let them down
- 4 = Most of the time I have felt that I let them down
- 5 = I always felt that I let them down

21. _____ During the last 2 weeks, have you been thinking that your family let you down or has been unfair to you?

- 1 = I never felt that they let me down
- 2 = I felt that they usually did not let me down
- 3 = About half the time I felt they let me down
- 4 = I usually have felt that they let me down
- 5 = I am very mad that they let me down

DATING

22. _____ How many times have you been on a date these last 2 weeks?

- 1 = More than three times
- 2 = Three times
- 3 = Twice
- 4 = Once
- 5 = None
- 8 = Under age 12; can't answer

23. _____ Have you been interested in dating during the last 2 weeks?

- 1 = I was always interested in dating
- 2 = Most of the time I was interested
- 3 = About half of the time I was not interested
- 4 = Most of the time I was not interested
- 5 = I was completely uninterested
- 8 = Under age 12; can't answer

Appendix B. Network of Relationships Inventory (NRI).

Everyone has a number of people who are important in his or her life. These questions ask about your relationships with each of the following people: your mother figure, your father figure, a sibling, a boy/girlfriend, and friends.

The first questions ask you to identify your mother figure, your father figure, a sibling, a boy/girlfriend, and two friends about whom you will be answering the questions.

- 1. Circle the mother figure you will be describing. Choose the one you think of as your primary mother figure.**

A. Biological/Adopted Mother B. Step-Mother (or Father's Significant Other) C. Other

- 2. Circle the father figure you will be describing. Choose the one you think of as your primary father figure.**

A. Biological/Adopted Father B. Step-Father (or Mother's Significant Other) C. Other

- 3. Please describe your relationship with the sibling you consider to be most important/closest to you. (If several are equally important/close, just select one.) If you do not have a sibling, leave these questions blank.**

Your Sibling's First Name _____ How old is s/he?
years old.

- 4. Now we would like you to choose a boy/girl friend whom you are dating or dated. You may choose someone you are seeing now, or someone you went out with earlier. If you choose a past boy/girl friend, please answer the questions as you would have when you were in the relationship.**

Boy/Girl Friend's First Name _____

How long is/was the relationship? ____ years ____ months

Are you seeing this person now? A. Yes B. No

- 5. Please choose the most important same-sex friend you have had in middle/high school. You may select someone who is your most important same-sex friend now, or who was your most important same-sex friend earlier. Do not choose a sibling. If you select a person with whom you are no longer friends, please answer the questions as you would have when you were in the relationship.**

Same-Sex Friend's First Name _____

How long is/was the friendship? ____ years ____ months *(please fill in numbers)*

Are you close friends now? A. Yes B. Friends, but not as close as before
C. No

6. Please choose the most important other-sex friend you have had in middle/high school. You may select someone who is your most important other-sex friend now, or who was your most important other-sex friend earlier. Do not choose a boy/girl friend—even if s/he is or was your best friend. If you select a person with whom you are no longer friends, answer the questions as you would have when you were in the relationship.

Other-Sex Friend's First Name _____

How long is/was the friendship? _____ years _____ months (*please fill in numbers*)

Are you close friends now? A. Yes B. Friends, but not as close as before C. No

Now we would like you to answer the following questions about the people you have selected above

7. How much do you and this person get upset or mad at each other?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

8. How much do you and this person get on each other's nerves?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

9. How much does this person treat you like you're admired and respected?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

10. How sure are you that this relationship will last no matter what?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

11. How much do you play around and have fun with this person?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

12. How much do you and this person disagree and quarrel?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

13. How much does this person help you figure out or fix things?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

14. How much do you and this person get annoyed with each other's behavior?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

15. How much do you share your secrets and private feelings with this person?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

16. How much does this person really care about you?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

17. How much do you and this person argue with each other?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most	Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5	1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5	1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5	1	2	3	4	5	Other-Sex Friend

18. How much do you and this person hassle or nag one another?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most		Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5		1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5		1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5		1	2	3	4	5	Other-Sex Friend

19. How much do you take care of this person?

	Little or None	Some- what	Very Much	Extre- mely Much	The Most		Little or None	Some- what	Very Much	Extre- mely Much	The Most	
Mother	1	2	3	4	5		1	2	3	4	5	Boy/Girl Friend
Father	1	2	3	4	5		1	2	3	4	5	Same-Sex Friend
Sibling	1	2	3	4	5		1	2	3	4	5	Other-Sex Friend

Appendix C. Center for Epidemiologic Studies Depression Scale (CES-D).

Instructions

For the following 20 items, please place an **X** in the box that best describes how you have felt over the past week:

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I did not feel like eating; my appetite was poor.	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4. I felt that I was just as good as other people.	3	2	1	0
5. I had trouble keeping my mind on what I was doing.	0	1	2	3
6. I felt depressed.	0	1	2	3
7. I felt that everything I did was an effort.	0	1	2	3
8. I felt hopeful about the future.	3	2	1	0
9. I thought my life had been a failure.	0	1	2	3
10. I felt fearful.	0	1	2	3
11. My sleep was restless.	0	1	2	3
12. I was happy.	3	2	1	0
13. I talked less than usual.	0	1	2	3
14. I felt lonely.	0	1	2	3
15. People were unfriendly.	0	1	2	3

16. I enjoyed life.	3	2	1	0
17. I had crying spells.	0	1	2	3
18. I felt sad.	0	1	2	3
19. I felt that people dislike me.	0	1	2	3
20. I could not get "going".	0	1	2	3

Appendix D. Children's Global Assessment Scale (CGAS).**CGAS Rating Form****Specified time period: 2 weeks****Please detail the basis for the CGAS rating by listing the details of the patient's functioning in each of the domains outlined below:**1. Depressive Symptoms/Diagnosis:2. Other Diagnoses:3. Family Relations:4. Peer Relations:5. School Functioning:6. Other:**CGAS SCORE:**