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The impact of perceived interpersonal functioning on treatment for adolescent depression: IPT-A versus treatment as usual in school-based health clinics

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Abstract

Objective—This study examined aspects of depressed adolescents' perceived interpersonal functioning as moderators of response to treatment among adolescents treated with interpersonal psychotherapy for depressed adolescents (IPT-A) or treatment as usual (TAU) in school-based health clinics.

Method—Participants were 63 adolescents (ages 12-18) participating in a clinical trial examining the effectiveness of IPT-A (Mufson, Dorta, Wickramaratne, et al., 2004). The sample consisted of 53 (84.1%) female and 10 (15.9%) male adolescents (mean age = 14.67). Adolescents were 74.6% Latino, 14.3% African American, 1.6% Asian American, and 9.5% other, and they came primarily from low-income families. Adolescents were randomly assigned to receive IPT-A or TAU delivered by school-based mental health clinicians. Assessments were completed at baseline and weeks 4, 8, and 12 (or at early termination) and included the HRSD, CBQ-20, and SAS-SR.

Results—Multilevel modeling indicated that treatment condition interacted with adolescents' baseline reports of conflict with their mothers and social dysfunction with friends to predict the trajectory of adolescents' depressive symptoms over the course of treatment, controlling for baseline levels of depression. The benefits of IPT-A over TAU were particularly strong for the adolescents who reported high levels of conflict with their mothers and social dysfunction with friends.

Conclusions—Replication with larger samples would suggest that IPT-A may be particularly helpful for depressed adolescents who are reporting high levels of conflict with their mothers or interpersonal difficulties with friends.

Adolescent depression is a significant public health problem with approximately 1 in 5 adolescents experiencing a depressive episode at some point during their teenage years (Lewinsohn, et al., 1993). Progress in the development of efficacious treatments for adolescent depression has been substantial. However, even the best treatments for adolescent depression are effective in only 50-70% of youth (e.g. TADS Team, 2004). There is a call for the field to move beyond determining what treatments work to identifying which treatments work for whom (Insel, 2009). Identifying patient characteristics that interact with or moderate treatment

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can help guide clinicians in selecting a treatment that will lead to better management of depression.

Interpersonal psychotherapy for depressed adolescents (IPT-A; Mufson, Dorta, Moreau, & Weissman, 2004) aims to reduce adolescents' depressive symptoms by helping them improve their relationships and communication skills. Adolescents treated with IPT-A demonstrated fewer depressive symptoms and better social and global functioning post-treatment than adolescents in control conditions (Mufson, Dorta, Wickramaratne, et al., 2004; Mufson, Weissman, Moreau, & Garfinkel, 1999; Rossello & Bernal, 1999). Some moderators of treatment outcome have already been identified: IPT-A has been found to be significantly more effective than treatment as usual (TAU) for adolescents who were older (ages 15-18), had higher levels of depression, poorer general functioning, or comorbid anxiety at initiation of treatment (Mufson, Dorta, Wickramaratne, et al., 2004; Young, Mufson, & Davies, 2006). Adolescents who were younger (ages 12-14), had lower levels of depression, higher general functioning, and no comorbid anxiety responded comparably to IPT-A and TAU.

The goal of the current study was to examine whether depressed adolescents' pre-treatment perceived interpersonal functioning moderated treatment outcome with IPT-A and TAU in school-based health clinics. Interpersonal stressors are among the strongest predictors of depression (Rudolph, et al., 2000). Depressed adolescents are more likely to have conflictual and unsupportive relationships with parents (Sheeber, et al., 2007), display poor communication patterns with friends, report having unsupportive friendships, and experience teasing and bullying (Allen, et al., 2006; Klomek, et al., 2007). Given IPT-A's emphasis on improving interpersonal difficulties that may be contributing to or exacerbating depression, we examined the impact of adolescents' initial reports of interpersonal functioning (conflict with their mothers, and social functioning at school, with friends, family, and dating) on the course and outcome of treatment. Because IPT-A specifically targets adolescents' interpersonal difficulties and previous analyses indicated that IPT-A is particularly effective for more symptomatic and impaired adolescents, we hypothesized that IPT-A would be more effective than TAU in treating depressed adolescents with poor perceived interpersonal functioning.

Method

Participants

Participants were 63 adolescents (ages 12-18) participating in a clinical trial examining the effectiveness of IPT-A (Mufson, Dorta, Wickramaratne, et al., 2004). Adolescents were referred for mental health treatment in five school-based health clinics in New York City. To be eligible, the following were required: Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967) ≥ 10 ; Children's Global Assessment Scale (CGAS; Shaffer, et al., 1983) ≤ 65 ; and DSM-IV diagnosis of major depression, dysthymia, depressive disorder NOS, or adjustment disorder with depressed mood. Adolescents were not eligible if they were mentally retarded, actively suicidal, in current treatment for depression, or taking antidepressant medication. They were also excluded if they had a life-threatening medical illness, psychosis, schizophrenia, or a substance-related disorder. At three schools, only English speaking students were included, while the other two schools included both English and monolingual Spanish-speaking students. Sample characteristics are presented in Table 1. See Mufson, Dorta, Wickramaratne, et al. (2004) for a complete description of the trial and CONSORT flow chart.

Treatment

Adolescents were randomized to receive IPT-A or treatment as usual (TAU). Both treatments were delivered by mental health clinicians in school-based health clinics. IPT-A is a 12 session evidence based psychotherapy that aims to decrease depressive symptoms by helping

adolescents improve their relationships and interpersonal interactions by addressing one or more of four interpersonal problem areas: grief, role disputes, role transitions, and interpersonal deficits (Mufson, Dorta, Moreau, et al., 2004). The sessions were 35 minutes and held weekly for 8 weeks. The remaining 4 sessions were scheduled at any point over the following 8 weeks.

TAU was whatever psychological treatment the adolescent would have received in the school-based clinic if the study had not been in place. The majority of adolescents received weekly individual supportive psychotherapy. Eight adolescents also received one to three family/parent sessions, and five adolescents participated in group therapy. TAU therapists predominantly described their theoretical orientation as psychodynamic. At the completion of each TAU therapy session, therapists completed the Therapeutic Procedures Inventory (McNeilly & Howard, 1991), a checklist of commonly used psychotherapy techniques. The most common treatment strategies endorsed were gaining a better understanding of the patient, establishing a genuine person-to-person rapport with the patient, and helping the patient talk about feelings and concerns. For a complete description of attrition, treatment adherence, clinician characteristics, and treatment fidelity, see Mufson, Dorta, Wickramaratne, et al., 2004.

Measures

Assessments were conducted by a psychologist or social worker blind to the adolescent's treatment condition at baseline and weeks 4, 8, and 12, or at early termination. A telephone follow-up interview was conducted at week 16. The week 16 assessments are not included in the current analyses because they were conducted by phone and were not full assessment batteries.

Depression Symptoms and Diagnosis

Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS):

The K-SADS (Chaput, Fisher, Klein, Greenhill, & Shaffer, 1999) is a semi-structured interview that assesses current, past, and lifetime diagnostic status of psychopathology for children and adolescents based on DSM-IV diagnostic criteria. In this study, only the depression module-child report was used. Inter-rater reliability among the three independent evaluators was .76.

Hamilton Rating Scale for Depression (HRSD): The HRSD (Hamilton, 1967) is a clinician-administered semi-structured interview developed to assess the severity of depression symptoms. Inter-rater reliability of the HRSD for the current sample was .84, and internal reliability (Cronbach's alpha) was .74.

Perceived Interpersonal Functioning

Conflict Behavior Questionnaire (CBQ-20): The CBQ-20 (Robin & Foster, 1989) is a self-report measure that assesses parent-child communication and conflict style. Adolescents completed the measure reporting on relationships with their mothers and fathers. Because one-third of the sample did not complete the CBQ-20 about their fathers, this data was not included in the analyses. Reliability (Cronbach's alpha) of the CBQ-20 was .93.

Social Adjustment Scale - Self-report (SAS-SR): The SAS-SR (Weissman & Bothwell, 1976) is a self-report measure that assesses social functioning in the following four categories: friends, school, family, and dating. Higher scores indicate greater dysfunction. The friends subscale (Cronbach's alpha = .73) assesses social functioning with peers. The school subscale (Cronbach's alpha = .73) assesses aspects of academic functioning. The family subscale (Cronbach's alpha = .69) assesses adolescents' global perceptions of family relations including the extent to which adolescents feel they can talk to their parents about problems, worries about

their family members, and feeling that their families have let them down. The dating subscale (Cronbach's alpha = .52) includes two items that assess frequency and interest in dating.¹

See Table 2 for descriptive statistics of the measures and previously identified moderators, as well as their intercorrelations.

Analytic Strategy

Analyses were conducted on the intent-to-treat sample and consisted of multilevel models in which repeated measures of depressive symptoms over time were nested within individuals. The level 1 model characterized the course of adolescents' depressive symptoms over time. Time was rescaled in the models so that the intercept represented the week 12 (post-treatment) assessment. The coefficient representing the linear rate of change in level of depressive symptoms at time zero (week 12) reflected the extent to which the adolescent's level of depressive symptoms was changing at week 12. The quadratic effect was assessed to allow for the possibility of an accelerating or decelerating rate of change over the study period (i.e. delay before change begins or early change followed by a leveling-off). The intercept, the linear rate of change, and the quadratic in these individuals were allowed to vary randomly.

The level 2 model included predictors to explain variance in the level 1 coefficients. The predictors were adolescents' baseline depressive symptoms, five measures of baseline perceived interpersonal functioning, treatment condition, and the interaction between the baseline interpersonal functioning and treatment condition. All of the interpersonal variables were centered prior to calculation of interactions and analysis. The linked level 1 and level 2 models presented statistical tests of the association of the predictors to levels of depressive symptoms post-treatment, the rate of change in depressive symptoms at the post-treatment assessment, and the curvature of the trajectory of depressive symptoms across all four time points. Analyses were conducted using Hierarchical Linear Modeling (Raudenbush & Bryk, 2002).

Results

The trajectory of adolescents' depressive symptoms over the course of treatment was significantly predicted by the interaction between treatment condition and baseline self-reports of conflict with their mothers and the effect size was in the medium range (see Table 3). Figure 1 presents four prototypical depression trajectories for adolescents treated with IPT-A and TAU who scored at the 75th and 25th percentile in level of conflict with mothers. Testing simple slopes for significance indicated that among adolescents who reported high levels of conflict with their mothers, treatment with IPT-A was associated with a greater acceleration in the reduction of depression symptoms (simple slope = 0.90, $t = 3.94$, $p = 0.00$), while TAU was not (simple slope = -0.26, $t = -1.15$, $p = ns$).

The benefits of IPT-A relative to TAU were also moderated by adolescents' baseline perceived social functioning with friends and this had a large effect size (see Table 4). Figure 2 presents prototypical trajectories for different combinations of IPT-A, TAU, high (75th percentile) scores on the SAS-SR friends subscale and low (25th percentile) scores on the SAS-SR friends subscale. Testing simple slopes for significance indicated that among adolescents who reported high levels of social dysfunction with friends, treatment with IPT-A was associated with a greater acceleration in the reduction of depression symptoms (simple slope = 1.03, $t = 3.94$, $p = 0.00$), while TAU was not (simple slope = -.30, $t = -1.56$, $p = ns$).

¹The internal reliability of the dating subscale was quite poor; however, we included the scale in the analyses for exploratory purposes.

Adolescents' perceived social dysfunction with family members and at school also showed significant effects, but did not vary as a function of treatment (see Tables 5 and 6). Across treatment conditions, adolescents showed less rapid reductions in depression if they reported high baseline levels of social dysfunction with family as compared to adolescents who reported low levels (see Figure 3). Adolescents who reported high baseline levels of school dysfunction also demonstrated higher levels of depression post-treatment and slower reductions in symptoms than adolescents who reported low levels (see Figure 4).

Adolescents' social dysfunction in dating was not significantly related to their depression symptom trajectories, which may be partly accounted for by the scale's poor internal reliability.

Given the number of analyses conducted, we applied the Bonferroni correction for multiple comparisons. Bonferroni correction is generally over-conservative. Perceived social dysfunction with friends continued to significantly moderate treatment outcome ($p < .01$), but conflict with mothers did not survive the correction. The moderators examined in this study were consistent with the theoretical approach to treatment and hypotheses were a priori. The results suggest that perceived conflict with mothers and social dysfunction with friends are at least worthy of further investigation as moderators of treatment outcome.

Discussion

We hypothesized that depressed adolescents who reported high baseline levels of interpersonal difficulties would show greater and more rapid reductions in depression symptoms if treated with IPT-A as compared to TAU. This hypothesis was confirmed for depressed adolescents who reported high levels of conflict with their mothers and social dysfunction with friends. While depressed adolescents with low levels of conflict with their mothers and social dysfunction with friends also demonstrated reductions in depression symptoms with IPT-A, the benefits of IPT-A over TAU were particularly dramatic for the adolescents who reported more difficulties. The effect sizes for these findings were in the medium to large range which suggests that these are meaningful effects. The finding for conflict with mothers is particularly significant in light of previous studies that have found that perceived parent-adolescent conflict predicted a poorer treatment response (Asarnow, et al., 2009; Birmaher, et al., 2000).

Across treatment conditions, adolescents showed less rapid reductions in depression if they reported high levels of social dysfunction with family than if they reported low levels. The SAS-SR measures different aspects of the parent-adolescent relationship than the CBQ-20. The CBQ-20 primarily assesses adolescents' perceptions of concrete aspects of conflict negotiation (e.g., "At least once a day we get angry at each other," "My mom and I sometimes end our arguments calmly"). In contrast, the family subscale of the SAS-SR assesses adolescents' global feelings about their relationships with family members and includes a broader range of parent-adolescent relationship qualities such as how well adolescents and parents generally get along and the extent to which adolescents feel they can talk to their parents about problems. The results suggest that adolescents' difficulties sharing feelings and feeling unsupported are associated with less improvement with both IPT-A and supportive psychotherapy.

Higher levels of perceived dysfunction at school also predicted poorer treatment response for both groups. The school subscale of the SAS-SR primarily assesses aspects of academic functioning (e.g., school attendance, ability to complete schoolwork, happiness at school). IPT-A focuses on improving adolescent depression by targeting their interpersonal relationships. Depressed adolescents having difficulties in school may need more intensive intervention around academic functioning than generally occurs in IPT-A or supportive psychotherapy.

The study's sample consisted primarily of low-income Hispanic females living in an urban setting. This extends the treatment literature to an understudied, underserved population, however, we do not know if the results are generalizable. The primary limitation of this study is the small sample size which may have limited the number of moderation effects detected. It also prohibited us from including the previously identified moderators besides depression in the model to assess their unique effects. Future studies with larger samples are needed. In addition, the use of non-self-report measures of interpersonal functioning, including observational assessments, will be important for minimizing bias

A common criticism of effectiveness studies is the difficulty in characterizing TAU (e.g. Spirito, Stanton, Donaldson, & Boergers, 2002). TAU is a heterogeneous treatment which makes it difficult to know the specific treatment techniques to which IPT-A is superior. Future studies in which IPT-A is compared to unitary treatment approaches will help clarify the results.

Randomized clinical trials have been critical tools for establishing first-line treatments for adolescent depression. The next step for the field is to determine best treatment approach for particular patients given their characteristics and circumstances (Insel, 2009). The results of the current study suggest that depressed adolescents' perceived interpersonal functioning is a domain that warrants further investigation as an indicator that treatment with IPT-A may be beneficial. Confirmation of this moderator in a larger prospective study would provide additional support for recommending IPT-A rather than TAU for depressed adolescents who report high levels of conflict with their mothers or interpersonal difficulties with friends.

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Figure 1. Adolescents' depression trajectories are predicted by the interaction between treatment condition and baseline level of conflict with their mothers.

Figure 2. Adolescents' depression trajectories are predicted by the interaction between treatment condition and baseline level of social dysfunction with friends.

Figure 3.

Adolescents' depression trajectories are predicted by their baseline level of social dysfunction within their families.

Figure 4. Adolescents' depression trajectories are predicted by their baseline level of social dysfunction at school.

Table 1

Characteristics of Sample

Variable	Percent
Demographic characteristics	
Age (<i>M</i>)	14.7
Gender	
Male	15.9
Female	84.1
Race/Ethnicity	
Hispanic/Latino	74.6
African American	14.3
Asian American	1.6
Caucasian	0
Other	9.5
Diagnostic characteristics	
Major depressive disorder	50.8
Dysthymic disorder	17.5
Double depression	6.3
Depressive disorder NOS	11.1
Adjustment disorder with depressed mood	14.3
Anxiety disorder	32.0
Oppositional defiant disorder	8.0
ADHD	6.0

Table 2

Adolescents' Mean Baseline Depression Symptoms (HRSD), Interpersonal Functioning (CBQ & SAS), Previously Identified Treatment Moderators, and their Intercorrelations

	HRSD	CBQ	SAS Friends	SAS School	SAS Family	SAS Dating	Age	Global Functioning	Comorbid Anxiety
Mean (SD)	18.63 (5.50)	8.37 (6.10)	2.80 (.61)	2.38 (.70)	2.57 (.79)	3.57 (1.14)	14.67 (1.93)	52.63 (5.71)	.77 (.42)
HRSD									
CBQ_Mother	.03								
SAS Friends	.36**	.25*							
SAS School	.39**	.10	.30*						
SAS Family	.38**	.52***	.37***	.34**					
SAS Dating	.05	-.25*	.39***	.05	-.21 ^t				
Age	.31*	.05	.08	.10	.17	.05			
Global Functioning	-.52***	-.01	-.27*	-.30*	-.26*	-.02	-.28*		
Comorbid anxiety	.28*	.01	.30*	.31**	.17	.13	.20	-.15	

^tNote: $p \leq .10$.

* Note: $p < .05$.

** Note: $p < .01$.

*** Note: $p < .001$.

Note: Higher scores on the CBQ and SAS indicate greater dysfunction.

Table 3

Relation of Adolescents' Depressive Symptoms (HRSD) to Baseline Depressive Symptoms (HRSD), Baseline Conflict with Mother (CBQ_Mother), and Treatment Condition

Predictor	Estimate	SE	t-ratio	Effect Size
Depressive symptoms at week 12				
Intercept	11.79	1.33	10.42***	
Treatment condition	-4.66	1.56	-2.99**	-.41
Baseline depression	.37	.16	2.27*	.35
Baseline CBQ_mother	.20	.20	1.0	.21
Treatment*baseline CBQ_mother	-.29	.30	-.95	-.24
Rate of change at week 12				
Intercept	-1.57	.52	-13.0**	
Treatment condition	.15	.70	.21	.04
Baseline depression	-.13	.06	-2.36*	-.43
Baseline CBQ_mother	-.18	.07	-2.55**	-.65
Treatment*baseline CBQ_mother	.20	.11	1.84 ^t	.56
Curvature across the course of treatment				
Intercept	.19	.19	1.04	
Treatment condition	.59	.28	2.15*	.38
Baseline depression	.03	.03	1.02	.21
Baseline CBQ_mother	-.08	.03	-2.60**	-.63
Treatment*baseline CBQ_mother	.10	.05	2.27*	.61

^t
 $p \leq .10$.

*
 $p \leq .05$.

**
 $p \leq .01$.

 $p \leq .001$.

Table 4

Relation of Adolescents' Depressive Symptoms (HRSD) to Baseline Depressive Symptoms (HRSD), Baseline Social Dysfunction with Friends (SAS_Friends), and Treatment Condition

Predictor	Estimate	SE	t-ratio	Effect Size
Depressive symptoms at week 12				
Intercept	11.76	1.12	10.55***	
Treatment condition	-4.67	1.56	-3.0**	-.41
Baseline depression	.38	.15	2.48*	.38
Baseline SAS_friends	2.56	1.74	1.49	.28
Treatment*baseline SAS_friends	-3.91	2.55	-1.53	-.32
Rate of change at week 12				
Intercept	-1.55	.52	-3.01**	
Treatment condition	.18	.68	.26	.06
Baseline depression	-.13	.06	-2.09*	-.44
Baseline SAS_friends	-1.89	.87	-2.18*	-.72
Treatment*baseline SAS_friends	2.59	.99	2.61**	.74
Curvature across the course of treatment				
Intercept	.20	.18	1.15	
Treatment condition	.61	.27	2.29*	.42
Baseline depression	.03	.02	1.21	.23
Baseline SAS_friends	-.94	.25	-3.75***	-.80
Treatment*baseline SAS_friends	1.34	.37	3.58***	.84

^t
 $p \leq .10$.

*
 $p \leq .05$.

**
 $p \leq .01$.

 $p \leq .001$.

Table 5

Relation of Adolescents' Depressive Symptoms (HRSD) to Baseline Depressive Symptoms (HRSD), Baseline Social Dysfunction with Family (SAS_Family), and Treatment Condition

Predictor	Estimate	SE	t-ratio	Effect Size
Depressive symptoms at week 12				
Intercept	12.04	1.10	10.97***	
Treatment condition	-4.93	1.54	-3.20**	-.44
Baseline depression	.29	.16	1.78 ^t	.29
Baseline SAS_family	3.21	1.49	2.95*	.45
Treatment*baseline SAS_family	-2.98	2.03	-1.47	-.32
Rate of change at week 12				
Intercept	-1.61	.56	-2.89**	
Treatment condition	.22	.72	.31	.06
Baseline depression	-.09	.06	-1.50	-.29
Baseline SAS_family	-.84	.49	-1.71 ^t	-.38
Treatment*baseline SAS_family	.35	.81	.43	-.12
Curvature across the course of treatment				
Intercept	.15	.19	.79	
Treatment condition	.65	.28	2.31*	.43
Baseline depression	.05	.03	1.89	.36
Baseline SAS_family	-.65	.22	-2.96**	-.67
Treatment*baseline SAS_family	.50	.34	1.98	.39

^t
 $p \leq .10$.

*
 $p \leq .05$.

**
 $p \leq .01$.

 $p \leq .001$.

Table 6

Relation of Adolescents' Depressive Symptoms (HRSD) to Baseline Depressive Symptoms (HRSD), Baseline Social Dysfunction at School (SAS_School), and Treatment Condition

Predictor	Estimate	SE	t-ratio	Effect Size
Depressive symptoms at week 12				
Intercept	11.88	1.03	11.52***	
Treatment condition	-4.76	1.49	-3.20**	-.44
Baseline depression	.25	.14	1.79 ^t	.25
Baseline SAS_school	3.55	1.18	3.01**	.45
Treatment *baseline SAS_school	-2.61	2.64	-.99	-.20
Rate of change at week 12				
Intercept	-1.57	.55	-2.84**	
Treatment condition	.16	.71	.22	.05
Baseline depression	-.09	.06	-1.42	-.28
Baseline SAS_school	-.74	.64	-1.15	-.29
Treatment *baseline SAS_school	.27	1.07	.25	.06
Curvature across the course of treatment				
Intercept	.19	.19	.98	
Treatment condition	.61	.27	2.22*	.41
Baseline depression	.05	.03	2.09*	.37
Baseline SAS_school	-.63	.20	-3.14**	-.58
Treatment *baseline SAS_school	.44	.46	.96	.25

^t
 $p \leq .10$.

*
 $p \leq .05$.

**
 $p \leq .01$.

 $p \leq .001$.