

## Working through the blues: A meta-analysis on Interpersonal Psychotherapy for depressed adolescents (IPT-A)



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### ABSTRACT

Previous research has indicated that Interpersonal Psychotherapy (IPT) is generally effective for ameliorating symptoms for adults suffering from depression. Indeed, this has been demonstrated through numerous clinical and open trials, and further confirmed on a larger degree through several meta-analyses. However, no such comprehensive reviews have been conducted exclusively with adolescents, a population for which interpersonal relationships holds immense developmental importance. Therefore, a meta-analysis of the effectiveness of IPT-A, the version of IPT modified to specifically address depression in adolescents, was conducted in the present review. A total of ten studies yielding 766 participants were included in the present meta-analysis and analyzed using a standardized mean gain (SMG) effect size. The results indicate that IPT-A was significantly effective at reducing depressive symptoms in adolescents and significantly more effective than control or treatment-as-usual groups in treating depression in adolescents. IPT-A yielded an overall effect size (Hedges  $g$ ) of 1.19, while the aggregate effect size for control/placebo groups was 0.58. Overall, the results of this review suggest that IPT-A holds similar promise for improving adolescent depression as the original version does for adults.

### 1. Introduction

Depression is one of the most prevalent mental disorders within adolescents in the United States currently. Indeed, the National Survey on Drug Use and Health (NSDUH) reported in 2014 that approximately 2.8 million children ages 12–17 had experienced a major depressive episode in the past year, accounting for about 11.4% of the total adolescent population within the United States (Center for Behavioral Health Statistics and Quality, 2015). Depression can cause serious impairment to both daily functioning and development in adolescents and is characterized by depressed moods, changes in mood, apathy toward school or recreational activities, feelings of boredom, sleep and appetite changes, low self-esteem, hopelessness, and (in some cases) suicidal ideation (American Psychiatric Association, 2013; Jacobson & Mufson, 2010).

While depression can be linked to a number of causes, interpersonal conflict is one of the key factors in the development of adolescent depression. Psychologists have conceptualized depression as being linked to the struggle of developing healthy interpersonal relationships (Jacobson & Mufson, 2010). Indeed, both Sullivan (1953) and Bowlby (1978) developed concepts of depression as related to interpersonal relationships. While Sullivan suggested that an absence or insufficiency of interpersonal relationships may negatively impact the mental health

of an individual (Sullivan, 1953), Bowlby explained that a lack of interpersonal relationships can result in emotional distress in the form of depression (Bowlby, 1978). Both models suggest that depression is linked to a disruption in forming healthy, positive interpersonal relationships.

Further research has emphasized the importance of the relationship between interpersonal conflict and depression specifically in adolescents. Depressed youth exhibit behavior that is detrimental to their relationships with others, which maintains and elevates risk for depressive symptomatology. Interpersonal stressors have also been shown to be more strongly linked to depression when compared to non-interpersonal stressors (Rudolph et al., 2000). Rudolph et al. (2000) examined the depression-specific life-stress model in order to assess the relationship between stress and depression in adolescents. It was found that when linking higher stress with higher depressive symptoms, interpersonal episodic and chronic stress (i.e. stress induced from interpersonal sources both in specific events and over time) was more highly correlated to depression than stress from other sources. These results were also significantly more prominent in girls than boys. In addition, Klomek, Marrocco, Kleinman, Schonfeld, and Gould (2007) found a link between poor peer relations and elevated depressive symptoms by surveying students across six New York State high schools; it was found that problematic relationships with peers, characterized as peer

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victimization and lack of connectedness, were associated with higher depressive symptoms and in many cases might actually qualify to be conceptualized as the experience of interpersonal trauma.

Other studies have found that when comparing family relationships across depressed and non-depressed adolescents, interpersonal conflict between parents and peers is more prevalent in adolescents suffering from depression than those who do not. Specifically, researchers found that depressed adolescents experienced less supportive and more conflictual relationships with parents than adolescents without mental health difficulties (Sheeber, Davis, Leve, Hops, & Tildesley, 2007). The study supported the importance of the relational shift from less parental control to increased autonomy in the adolescent-parental relationship, specifically highlighting that difficulties with a shift toward autonomy can be related to depressive symptoms.

### 1.1. Interpersonal Psychotherapy

Interpersonal struggles are associated with depressive symptoms during the period of adolescence. Therefore, treatment methods have been developed to more specifically address the interpersonal relationships of individuals suffering from depression. In particular, Interpersonal Psychotherapy (IPT) was originally developed to identify and address the most important interpersonal relationships of adult patients with depression in order to improve interpersonal relationships and skills (Klerman, Weissman, Rounsaville, & Chevron, 1984). The focus of the treatment lies in addressing two components of depression which are mostly highly related to interpersonal symptoms: symptom formation and social functioning (Jacobson & Mufson, 2010).

The structure of IPT divides the intervention into three phases: the initial phase, middle phase, and termination phase. During the initial phase (1–3 sessions), the therapist works to build a therapeutic alliance with the client. Together, they work to identify one of four target areas to work on during the course of therapy. These target areas are either grief (i.e. grief loss of significant relationship), role transition (i.e. problems transitioning into adolescence), role dispute (i.e. problems with expectations in a significant relationship), or interpersonal deficits (i.e. isolation due to lack of social and communication skills) (Jacobson & Mufson, 2010). Once the target area is chosen, the therapist and client set goals to achieve during treatment.

The middle phase lasts from 6 to 8 sessions and encompasses most of the work in IPT. During this stage, the client builds interpersonal skills and affective awareness. This is accomplished by education on depression, examining problematic interpersonal relationships, determining related affective symptoms, and developing better interpersonal skills (Jacobson & Mufson, 2010). These skills are applied to one relevant relationship so that the client may practice and improve in their interpersonal functioning.

In the termination phase (remaining 1–3 sessions), the therapist works to achieve effective closure from their relationship with the client. This is done by reviewing treatment and symptoms and encouraging independent utilization of skills (Jacobson & Mufson, 2010). The therapist hopes to foster an ability in the client to effectively form and maintain interpersonal relationships outside of treatment.

Later developments of IPT yielded a modified treatment method to address depression in adolescents: specifically, Interpersonal Psychotherapy for depressed adolescents (IPT-A), and a group adaptation for adolescents, IPT-AG (Moreau, Mufson, Weissman, & Klerman, 1991; Mufson et al., 2004). IPT-A follows the same structure as the originally-developed IPT but accounts for more of the developmental issues involved in the interpersonal relationships of adolescence such as struggles to develop more autonomy from parents and develop a stronger connections with peers. These developmental shifts can cause tension and conflict in both the adolescent-parent relationship and adolescent-peer relationships, and could be addressed in therapy (Jacobson & Mufson, 2010).

### 1.2. Previous meta-analyses on IPT

Since its original development and modification, IPT has been tested for its successfulness in treating depressive symptoms in a number of empirical studies. Indeed, two previous meta-analyses have compiled such studies in order to assess the overall value of IPT in treating depression (Cuijpers et al., 2011; de Mello, de Jesus Mari, Bacaltchuk, Verdelli, & Neugebauer, 2005). Both of these reviews found IPT to be a successful treatment method for relieving the symptoms of depression when compared to both placebo/control groups and other treatment methods (e.g. cognitive-behavioral therapy or pharmacotherapy). Results from each elaborated on the effectiveness of IPT.

Specifically, the earlier review (de Mello et al., 2005) included those which examined IPT as a treatment method for adults and adolescents with depressive spectrum disorders (DSD) using randomized control trials (RCT). Though, of the 13 total studies included, only two sampled solely from adolescents populations. The results showed that IPT was significantly more effective in treating depressive symptoms than both control/placebo groups and cognitive behavioral therapy (CBT) groups. However, IPT in combination with medication was only equally as effective as medication treatment alone. No sub-analyses were conducted to draw conclusions about effectiveness in particular variables (e.g. target populations or treatment application). In regards to acceptability, IPT alone was more acceptable than control/placebo methods, while IPT and antidepressant medication was more acceptable than medication treatment alone (de Mello et al., 2005).

The more recent review (Cuijpers et al., 2011) analyzed 38 relevant studies, including 6 studies that focused on adolescents specifically. Inclusion criteria was similar to de Mello et al. (2005), including those which tested the effectiveness of IPT in treating depressive disorders in adults and adolescents and used randomized control trials. The findings were similar; IPT was found to be significantly more effective than control groups. Yet in comparison to other treatment methods, IPT was either equally or less effective in treating depressive symptoms (Cuijpers et al., 2011). Overall, it was concluded that IPT was shown to be efficacious as both an acute and maintenance treatment when compared to other evidence-based treatments, but no conclusion regarding target populations were formed.

### 1.3. Purpose of current meta-analysis

The purpose of this current meta-analysis was primarily to assess IPT as a treatment option focused entirely on adolescent depression. The findings from the previous two meta-analyses support IPT as an effective treatment method for depression in general; however, both studies lacked any analysis specifically on IPT-A. The meta-analysis by de Mello et al. (2005) only included two studies exclusively sampling adolescents and lacked conclusions about IPT-A. A later review (Cuijpers et al., 2011) only examined adolescents in a subgroup analysis comparing target groups (e.g. adults, adolescents and specific target group) when comparing IPT to control groups. Because neither meta-analysis isolated the adolescent population in their analyses, broad conclusions about the effectiveness of IPT for adolescents have not been reached. Therefore, the primary goal of this meta-analysis was to examine the efficiency of IPT-A or IPT-AG in addressing the symptoms of depression in the adolescent population in particular.

Overall, it was hypothesized that Interpersonal Psychotherapy for adolescents would be more effective than control or treatment as usual conditions when used to improve symptoms in adolescents suffering from depression.

## 2. Methods

### 2.1. Searching

The studies reviewed in this meta-analysis were located through a

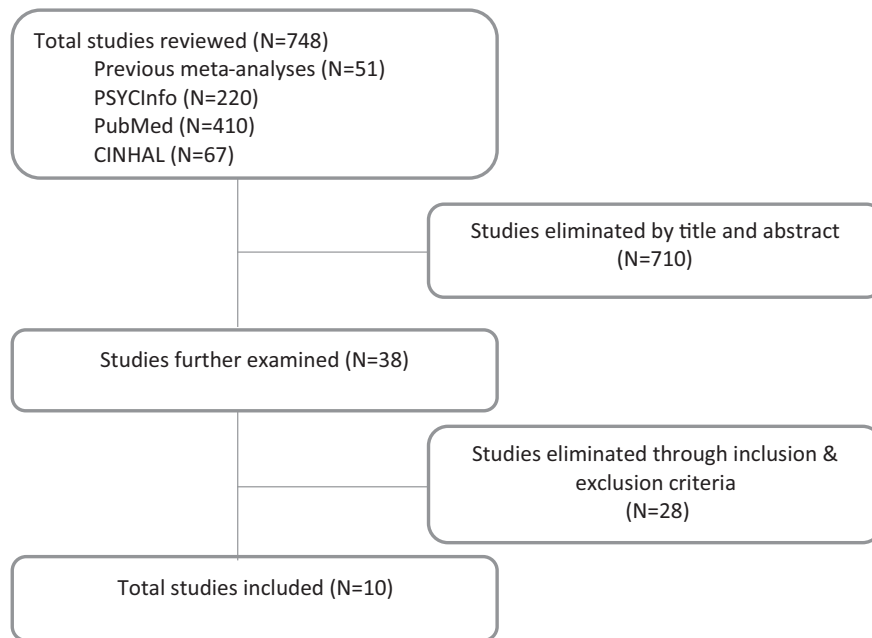


Fig. 1. Flow chart of collection and selection of studies used for further analysis.

variety of means (Please see Fig. 1). The initial search began by examining the two above-cited meta-analyses conducted on IPT (Cuijpers et al., 2011; de Mello et al., 2005). The samples from the previous studies were examined to determine which were applicable for the current meta-analysis according to the selection criteria described below. The total number of studies examined by this approach was 40 after eliminating any duplicate studies that were included in both meta-analyses. Most of the studies were excluded based on the population that was addressed by the researchers (e.g. most studies examined either adult populations or did not specify their sample's population). After a thorough examination, the earlier meta-analysis (de Mello et al., 2005) yielded a total of 2 applicable studies, while a total of 6 studies were obtained from the later meta-analysis (Cuijpers et al., 2011).

From there, several databases (PsycINFO, PubMed, CINHAL Plus with Full Text) were searched to retrieve any other relevant studies. Search terms such as “Interpersonal Psychotherapy” and “Adolesc\*” (\* used to account for all relevant terms such as adolescent, adolescence, etc.) were initially utilized. To ensure comprehensiveness, we then replaced terms such as “adolescent” with “youth” or “teen\*” and “Interpersonal Psychotherapy” with “IPT” or “IPT-A” in hopes of capturing any additional studies germane to the topic. The final search was conducted on April 1st, 2016.

## 2.2. Selection criteria

Studies were included or excluded based upon whether or not they met certain criteria. Each of these criteria was screened for when combing through the remaining 38 studies. Studies which contained the following features were included: targeted adolescent population (in the present meta-analysis, defined as the age range spanning 12–19), used IPT-A or IPT-AG as a treatment method for depression, and with clinically recognized depressive symptoms assessed with a well-validated measure (see Measures subsection below).

Certain criteria were also used to exclude studies which were not relevant to our topic of study. Studies which used other interpersonal counseling methods (e.g. psychodynamic therapy) to treat depression, studies which used IPT-A as a preventive measure for depression-inclined adolescents (e.g. Interpersonal Psychotherapy-Adolescent Skills Training [IPT-AST]), studies with overlapping samples and duplicate studies were excluded from the final analysis.

Relevant studies were those which satisfied all inclusion criteria and did not violate any exclusion criterion. After completing this further examination, a total of 10 studies were deemed appropriate for our study and used in our current analysis.

## 2.3. Data abstraction

All studies were coded by the second author (DE); consistent with indications from Lipsey and Wilson (2000): “In small meta-analyses, the coding will be done entirely by the researcher” (p.90). All variables of interest were captured using a codebook collaboratively developed by the authors via an iterative process, and then transposed into an SPSS file, with the codebook being available upon request to the article author. Quantitative data from measures to be analyzed in this review were entered into a Microsoft Excel (Microsoft Corp., Redmond, WA) database, with algorithms programmed in to calculate effect sizes (ESs). When data necessary for the computation of ESs or related variables of interest was not presented in manuscripts, an effort was made to obtain the needed information directly from the study authors. Consistent with the study selection criteria described above, if missing quantitative data for effect sizes could not be obtained through communication with authors, that study was excluded.

## 2.4. Measures

As the studies represented in the current meta-analytic review investigated samples of adolescents, self-report of depressive symptomatology was the most common modality by which outcomes were evaluated. These were therefore the measures that were evaluated, and included: the *Beck Depression Inventory, first and second editions* (BDI & BDI-II; Beck, 1985; Beck, Steer, & Brown, 1996), the *Children's Depression Inventory* (CDI, *Children's Depression Inventory* (CDI; Kovacs, 1985, 1992); the *Edinburgh Depression Scale* (EDS; Green & Murray, 1994), and the *Acholi Psychosocial Assessment Instrument* (APAI; Bolton, 2001). Only one included study used the APAI on its own, and only one study used the EDS in combination with the BDI.

## 2.5. Quantitative data analysis

Included studies were analyzed using a standardized mean gain

**Table 1**  
General characteristics of studies used in analysis.

Study	Country	N	% male	Mean age	Age range	# weeks of treatment	Compared against	Treatment deliverer
Bolton et al. (2007)	Uganda	314	43%	15.0	14–17	16	Creative play & waitlist	Twelve facilitators who received 2 weeks of training in IPT
Miller, Gur, Shanok, and Weissman (2008)	USA	11	0%	14.7	14–18	12	None	Licensed clinical psychologist with previous training
Mufson et al. (1999)	USA	48	27.1%	15.8	12–18	12	Placebo	Two child psychiatrists, a licensed clinical psychologist, and a masters' level psychologist with previous clinical experience
Mufson, Dorta, et al. (2004)	USA	63	16%	15.1	12–18	12–16	TAU	One doctoral level clinical psychologist and six social workers who received training in IPT
Mufson et al. (2015)	USA	10	20%	15.3	12–19	6	None	One doctoral level psychologist who received training in IPT
O'Shea, Spence, and Donovan (2015)	Australia	39	15.4%	15.33	13–19	12	None	Five psychologists who received training in IPT
Rosselló and Bernal (1999)	Puerto Rico	71	46%	14.7	13–17	12	CBT & Waitlist	Advanced graduate clinical psychology students with previous experienced who received training in IPT
Rosselló et al. (2008)	Puerto Rico	112	44.6%	14.5	12–18	12	CBT	Four advanced graduate clinical psychology students with previous experienced who received training in IPT
Santor and Kusumakar (2001)	USA	25	8%	16.2	12–19	12	None	Nine clinical therapists who received training in IPT
Tang et al. (2009)	Taiwan	73	20.5%	15.25	12–18	6	TAU	One school counselor and five intern counseling psychotherapists who received training in IPT

effect size. We calculated these effect sizes (Hedges *g*) for all studies on the basis of contrasts between baseline and post-intervention.

$$\text{Hedges } g = (d) \times \left( 1 - \frac{3}{4df - 1} \right)$$

For studies that reported data on more than one outcome measure, a single pooled effect size was calculated for each study. From the distribution of Hedges *g* values produced, a summary effect was produced by pooling across studies and calculating an average effect size statistic. Analyses were completed following the procedures outlined by Borenstein, Hedges, Higgins, and Rothstein (2009), developers of the software program Comprehensive Meta-Analysis, which has been utilized in other recent meta-analytical investigations (e.g. Brunwasser, Gillham, & Kim, 2009; Hoffman, Sawyer, Witt, & Oh, 2010). Additional analyses were conducted using the SPSS statistical software package (SPSS, Inc., Chicago, IL). In interpreting results, an effect size of 0.8 was considered large, 0.5 moderate, and 0.2 small, in line with standards set forth by Cohen (1988).

As this was a meta-analytic review of already-published studies, informed consent did not need to be obtained. There are no actual or potential conflicts of interest to disclose.

### 3. Results

#### 3.1. Characteristics of studies

A total of 748 studies were reviewed throughout the course of searching (Fig. 1). A total of 697 were found using database searches including PSYInfo (N = 220), PubMed (N = 410) and CINHAL Plus with Full Text (N = 67), while an additional 51 studies were identified through review of two previous meta-analyses on this topic. We examined the databases at length to search for any studies which might have been overlooked or not included in the previous two meta-analyses because of differing inclusion and exclusion criteria. After reviewing the title and abstract of each study, a large number of which were eliminated for not meeting certain inclusion criteria, and a total of 38 studies were selected for further examination.

From there, ten studies were ultimately selected for inclusion, representing a total of 766 participants. Five of these were randomized-controlled trial studies; three were either pilot or open trial studies, and the remaining two randomized participants to comparative conditions consisting of different therapeutic formats. All ten studies examined IPT-A as an acute treatment (i.e. not as a maintenance treatment after previously reaching remission) lasting an average of 12 weeks and including 12–16 sessions; however, two studies varied by delivering IPT-A over a six week period (Mufson, Yanas-Lukin, & Anderson, 2015; Tang, Jou, Ko, Huang, & Yen, 2009). Tang et al. (2009) condensed the treatment to a 6 week period but still included the standard 12 sessions by implementing bi-weekly sessions. Mufson et al. (2015) administered a brief version of IPT-A which followed the same guidelines as the standard version of IPT-A with the only exception of overall treatment length. Further, IPT-A was administered in either group format (n = 4) or as an individual treatment (n = 7; one study compared IPT-A administered in group format vs. individual format.)

Five studies compared IPT-A against control conditions. Two studies included a treatment-as-usual condition in which participants would receive counseling normally offered by the school services (Mufson, Dorta, et al., 2004; Tang et al., 2009). Three studies included an intervention that did not contain IPT-A components, but rather consisted of having the therapist listen to the participant and review symptoms (Bolton, Bass, Betancourt, et al., 2007; Mufson, Weissman, Moreau, & Garfinkel, 1999; Rosselló & Bernal, 1999). Only three studies included an alternative treatment condition to IPT-A, two of which were randomized controlled trials. These included two studies which implemented a CBT condition (Rosselló & Bernal, 1999; Rosselló, Bernal,



& Rivera-Medina, 2008) while the other included a Creative Play therapy in which participants were involved in various games and tasks where interpersonal skills were developed.

In regards to the sample population, participants ranges in age from 12 to 19 ( $M = 15.1$ ,  $SD = 1.5$ ) and were comprised of mainly females (65.4% female). Participants all met criteria for a DSM-IV diagnosis of some type of depressive spectrum disorder and were recruited from a variety of countries including USA, Uganda, Puerto Rico, Taiwan and Australia (Table 1).

### 3.2. Homogeneity findings

The effect size distribution was evaluated to rule out that existing variation is explained by random sampling error within studies. To accomplish this objective, the  $Q$ -statistic (Borenstein et al., 2009) and the  $I^2$  statistic (Higgins, Thompson, Deeks, & Altman, 2003) were computed. The  $Q$ -statistic evaluates the null hypothesis that all studies share a common effect size, whereas the  $I^2$  statistic estimates the proportion of observed variance that reflects real differences in effect size. With regards to the latter, 25%, 50%, and 75% are suggested standards against which to compare an obtained  $I^2$  statistic, reflecting “low,” “moderate,” and “high” amounts, respectively, of how much variance is accounted for by real differences. In the present analysis, the null hypothesis that all studies share a common effect size was rejected ( $Q = 22.57$ ,  $p < .01$ ). Further, the  $I^2$  statistic indicates that 60% of the observed variance is accounted for by real differences. These homogeneity results support the a priori decision to conduct the meta-analysis according to a random effects model.

### 3.3. Power analysis

In meta-analysis, robustness of the obtained effect size can be evaluated through the calculation of a value known as the Fail-Safe  $N$ . In the present review, a criterion effect size of 0.20 was selected as the level at which results would no longer be considered meaningful, as this represents what Cohen's standards for effect size interpretation suggest are small effect sizes (Cohen, 1988). Using this value, results indicate that 49 additional investigations of the IPT-A program – all with an effect size of zero – would have to remain unidentified (“in the file drawer”) to reduce the summary effect size for depression interventions from 1.18 to 0.20. These fail-safe  $N$  findings therefore suggest that the obtained summary effect sizes are indeed robust, would not be considerably altered by presence of a few unidentified studies reaching null effects, and thus are an accurate representation of the existing research base on IPT-A.

### 3.4. Quantitative data synthesis

It was often the case that studies utilized and reported on more than one measure for a particular construct. Treating multiple measures of a unitary construct as distinct entities violates assumptions of independence that underlie the statistical process of meta-analysis (Rosenthal, 1984). Following recommendations of Lipsey and Wilson (2000) and consistent with the approach of authors of recently published high quality meta-analyses (e.g. Stewart & Chambless, 2009), in order to address this issue, multiple effect sizes for a particular construct within individual studies were averaged. This was done prior to synthesis with effect sizes from other studies so as to ensure that each study would only contribute one single effect size per construct.

For the 10 studies meeting inclusion/exclusion criteria that evaluated a trial of IPT-A, the aggregated standardized mean gain (SMG) effect size estimate (Hedge's  $g$ ) for those individuals receiving the intervention was 1.19 (95% CI [0.98, 1.40],  $p < .0001$ ) for reducing depressive symptomatology (Table 2). From amongst those ten studies, five utilized control groups, for which the summary SMG (e.g., pre-post) effect size estimate was 0.58 (95% CI [0.27, 0.89],  $p < .001$ ) in terms

Table 2

Individual effect sizes (Hedges  $g$ ) of Interpersonal Psychotherapy (IPT) on depression symptoms.

First Author, (Year)	Effect Size (95% CI)
Bolton et al., (2007)	1.77 (1.56 – 1.98)
Miller et al., (2008)	0.73 (0.52 – 0.94)
Mufson et al., (1999)	1.32 (1.12 – 1.54)
Mufson et al., (2004)	1.43 (1.21 – 1.64)
Mufson et al., (2015)	0.76 (0.54 – 0.97)
O'Shea et al., (2015)	0.89 (0.68 – 1.10)
Rossello et al., (1999)	0.95 (0.74 – 1.16)
Rossello et al., (2008)	1.42 (1.21 – 1.63)
Santor et al., (2001)	1.35 (1.13 – 1.56)
Tang et al., (2009)	1.26 (1.05 – 1.47)
Overall	1.19 (0.98 – 1.40)

of a decrease in depressive symptoms over time. It is notable that the control did yield a significant effect. However, as can be seen, the confidence interval (CI) of the control group did not contain the value of the IPT-A intervention group, indicating that a significant difference exists; direct statistical comparison between the two groups provides consistent numerical support to this conclusion ( $Z = 3.62$ ,  $p < .001$ ), indicating that participants receiving IPT-A demonstrated significantly greater reductions in depressive symptoms from baseline-to-post-intervention than those in control conditions.

## 4. Discussion

While the existing literature has demonstrated the effectiveness of IPT-A within individual trials, the results from this comprehensive meta-analysis indicate that IPT-A is likely an efficacious acute treatment for adolescents with depressive symptoms. IPT-A demonstrated a significant change in depression symptoms over all ten studies, regardless of cultural diversity or delivery method (i.e. individual vs. group therapy), and yielded an impressive combined effect size ( $g = 1.18$ ) especially when compared to control groups ( $g = 0.58$ ). The mean effect size of IPT-A was significantly greater than that of the control groups, resulting in a significant difference comparable to a moderate effect size. This was not the case when comparing IPT-A to CBT conditions ( $g = 1.24$ ); however, the lack of data for CBT limited the statistical power of predicting a proper effect size and therefore no strong conclusion could be made in comparing to IPT-A to CBT. Similarly, no comparison could be made between other psychotherapy methods (e.g. creative play, psychodynamic therapy) because the condition only included a single study.

Overall, the conclusions from this meta-analysis support the evidence toward using IPT-A in treating adolescent depression, which is especially encouraging when considering the numerous situations in which IPT-A may be beneficial. Given the increasing evidence of the involvement of interpersonal factors with adolescent depression, future directions in the evaluation of IPT-A should explore potential value in cases involving interpersonal stress or traumatic interpersonal events (Jones, 2008; Shirk, Deprince, Cristostomo, & Labus, 2014).

### 4.1. Limitations & advantages

As outlined in our hypothesis, the goal of this research project was to generate comparisons of IPT-A to other experimental conditions in order to establish the effectiveness of IPT for adolescents struggling

with depression. Past meta-analyses of IPT (e.g. Cuijpers et al., 2011; de Mello et al., 2005), were not specifically focused on adolescents. While we were able to draw conclusions about the effectiveness of IPT-A alone and in comparison to general control conditions, the limited number of studies utilizing alternative therapies as comparison conditions restricted our being able to draw conclusions in this domain. Of the studies included, only two of the ten included an alternative treatment condition (i.e. CBT conditions) that could be used for comparison (Rosselló et al., 2008; Rosselló & Bernal, 1999). The only other treatment method found throughout the studies, creative play – an alternative psychotherapy, lacked a sufficient number of conditions to make a comparison on a meta-analytic level (Bolton et al., 2007). This limited both the variety of comparisons which could be made and the power of comparison that was made.

Other limitations included the lack of follow-up data and narrow variety of applications. Without follow-up data, our study lacked predictive power in claiming the effectiveness of IPT-A past the termination of treatment. Therefore, our results were only limited to the duration of the treatment and cannot comment on IPT-A's effectiveness over a long period of time. The narrow variety of applications also restricted our results solely to IPT-A as an acute treatment for depression. Other applications of IPT-A (e.g. IPT-A as a maintenance treatment, IPT-A as a combination treatment) were excluded due to lack of use throughout the studies collected. Lastly, it should be noted that studies varied in terms of their methodological rigor, and that due to the number of studies included in this review, such method quality was not separately coded. It is our hope that we, or other researchers, will be able to conduct a future meta-analytic review when more studies on this topic are published. Thus, the incorporation of study quality is highlighted as an avenue for future research (see further ideas in this vein below) particularly amongst adolescent samples receiving IPT.

In contrast, certain features from this study further strengthened the conclusions. For instance, the inclusion of non-published studies during the collection period allowed for a more complete sample of studies and took into account the possibility of publication bias (Smith, 1980; Sterling, 1959). Further, the realistic percentage of female and male participants (65.4% female, 34.6% male) was congruent with the actual ratio of female to male adolescents suffering from depression (2:1 female to male ratio; Hyde, Mezulis, & Abramson, 2008).

#### 4.2. Future research

Our current meta-analysis revealed a number of implications for future research of IPT-A. Foremost, IPT for adolescent depression must be continually studied as the number of current studies examining IPT-A is limited. The modest collection of studies analyzed in this study ( $n = 10$ ) was comparable to a similar meta-analysis examining the effectiveness of CBT on adolescent depression ( $n = 11$ ), but small in comparison to previous meta-analyses on the effectiveness of IPT in general (Cuijpers et al., 2011; de Mello et al., 2005; Klein, Jacobs, & Reinecke, 2007). Further research must be conducted in order to create a stronger claim of IPT as an evidence-based therapy for adolescents. This is especially important given the increasing evidence of interpersonal factors associated with adolescent depression (Marttunen, Haarasilta, Aalto-Setälä, & Pelkonen, 2003; O'Shea, Spence, & Donovan, 2014; Thapar, Collishaw, Pine, & Thapar, 2012). Equally as important, more research trials comparing IPT-A to other treatment types should be conducted in order to create more direct comparisons. Thus far, only 3 individual trials and one meta-analysis have tested any direct comparisons of IPT to other evidence based treatments (Bolton et al., 2007; Rosselló et al., 2008; Rosselló & Bernal, 1999; Zhou et al., 2015).

The various applications of IPT to real world cases must also be explored. None of the 10 analyzed studies reported any long term data, which is crucial considering the likelihood of recurrent depressive episodes for adolescents with a former depression diagnosis (Dunn & Goodyer, 2006; Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2000).

Though IPT is a time-limited therapy, long term results are still important to test the generalizability of the therapy. In addition, given the high rates of comorbidity amongst adolescents with depression, more research examining the effectiveness of IPT for adolescents with additional disorders should also be explored (Ford, Goodman, & Meltzer, 2003; Small et al., 2008). Indeed, IPT could prove to be highly effective at treating multiple disorders given its adaptability for treating disorders such as PTSD, anxiety, eating disorders and substance abuse (Frank, Ritchey, & Levenson, 2014).

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<sup>1</sup> References marked with an asterisk (\*) indicate studies included in the meta-analysis.

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