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Teachers' Impact on Psychosocial Treatment for Latinx Youth with ADHD

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Abstract

This study examined the impact of teacher engagement in a psychosocial treatment for Latinx youth with attention-deficit/hyperactivity disorder (ADHD). Results revealed that teachers were equally engaged in treatment regardless of the source of the referral to treatment, indicating that teachers were motivated to work with students and families. Additionally, results indicated that referral source and teacher engagement in treatment were related to treatment outcomes. These findings indicate that higher-quality teacher intervention implementation is related to enhanced child and parent treatment outcomes in a Latinx sample. Results

additionally revealed significant relationships among parental acculturation and treatment outcomes. Clinical implications are discussed.

Keywords:

ADHD, Latinx population, treatment, teachers, youth

Attention-deficit/hyperactivity disorder (ADHD) is a mental health disorder beginning in childhood, characterized by a developmentally inappropriate degree of hyperactivity and impulsivity and/or inattention resulting in functional impairment across settings (Bernardi et al., 2012; National Institute of Mental Health [NIMH], 2012). Although Latinx individuals are less likely than European Americans to receive appropriate treatment for ADHD (Flores & the Committee on Pediatric Research, 2010; Morgan et al., 2014), they benefit from evidence-based ADHD treatment when they receive it (i.e., Gerdes et al., 2021). Evidence-based treatments for ADHD have been identified, most of which include home- and school-based components, with teachers often playing an important role in treatment implementation (Evans et al., 2014). Specifically, teachers may collaborate with parents and clinicians to create and implement Daily Report Cards (DRCs), through which children's progress toward daily goals is monitored in the classroom setting and paired with a reward in the home setting (Moore et al., 2016). The quality of teacher intervention implementation has been shown to be related to functional outcomes across domains (Hirschstein et al., 2007). This study adds to the current literature by highlighting the important role teachers play in a psychosocial intervention for ADHD with a classroom component, as well as by considering this in a sample of Latinx families and examining the role of acculturation.

ADHD

ADHD is a common mental health disorder of childhood, with research estimating that 8% of youth in the United States are affected (Larson et al., 2011). Elevated levels of inattention and/or hyperactivity and impulsivity, as well as functional impairment across domains, characterize the condition and often persist beyond childhood (Bernardi et al., 2012; Biederman et al., 2012; NIMH, 2012; Pelham et al., 2005). Research has identified well-established psychosocial treatments for ADHD, with most utilizing behavioral techniques including behavioral parent training, behavioral classroom management, and behavioral peer interventions; teacher involvement is an important element of many of these treatments (Evans et al., 2014).

One of the most common ways in which teachers are involved in psychosocial interventions for ADHD is through the use of a DRC, a home-school communication tool through which teachers inform parents about children's progress toward classroom-based goals. Teachers often participate in developing the DRC goals. Their primary role is then to track the child's success on the specified goals and send the DRC home with the child each day. Parents' role, meanwhile, is to ask their child for the DRC and provide a small reward in the home setting, commensurate with the goals achieved, on a daily and/or weekly basis (DuPaul et al., 2011). DRCs have been found to be effective in treating ADHD and other conditions across preschool to junior high school students (DuPaul et al., 2011; Schumaker et al., 1977; Verduin et al., 2008). Importantly, DRCs have been used with individuals of various ethnic backgrounds, including Latinx students and families (Gerdes et al., 2021).

ADHD in the Latinx population

Regrettably, limited research has examined ADHD treatment in Latinx families. As Latinx individuals account for over 15% of the U.S. population (Ennis et al., 2011) and it is predicted that almost a third of the U.S. population will identify as Latinx by 2060 (U.S. Census Bureau, 2012), it is of utmost importance that research examine how the condition is best treated in this large and growing population. Research conducted to date has identified that individuals of Latinx descent are less likely than individuals of other ethnic backgrounds to seek out and

receive treatment for ADHD, as well as other mental health services (Eiraldi & Diaz, 2010; Flores & The Committee on Pediatric Research, 2010; U.S. Department of Health & Human Services, 2001). Both practical and cultural barriers may account for this disparity (Kouyoumdjian et al., 2003). Nonetheless, recent research concluded that evidence-based practices in the treatment of ADHD are appropriate for use with Latinx individuals and families (Miranda et al., 2005). At the same time, however, treatment should be adapted as needed in light of relevant practical and cultural considerations (Miranda et al., 2005; Rothe, 2005).

The role of acculturation

Although most of the existing research on the Latinx population considers this group as a whole, the Latinx population is extremely diverse. One way in which this population varies is in terms of acculturation, defined as the process of ongoing changes that occurs when individuals from distinct cultural groups come into contact with one another (Berry, 1997). Acculturation has been found to be related to various aspects of child psychopathology. For example, Latinx parental cognitive orientation toward traditional Latinx culture has been found to be associated with sociological/spiritual beliefs about the etiology of ADHD over biopsychosocial beliefs about the etiology of ADHD (Lawton et al., 2014). Additionally, researchers identified a relationship between parental acculturation and a measure of ADHD symptomatology, indicating that the measure was culturally biased, while a measure of functional impairment was not associated with parental acculturation and, thus, more appropriate for use with Latinx families (Gerdes et al., 2013).

With respect to considerations of acculturation and cultural orientation within ADHD treatment, researchers have made the general recommendations to assess Latinx families' acculturation before initiating treatment with them and then to approach treatment flexibly, incorporating culturally congruent changes as appropriate and continuously communicating with families about their preferences and needs (Barker et al., 2010). More specifically, researchers recently developed a culturally adapted version of Parent Management Training, a behavioral parent training intervention that has demonstrated positive outcomes, and examined outcomes in a group of Spanish-speaking Latinx individuals less oriented to U.S. mainstream culture and more oriented to traditional Latinx culture. Results indicate that the culturally adapted treatment (CAT) leads to positive outcomes for Latinx families of children with ADHD, resulting in reduced ADHD symptomatology and functional impairment, as reported by both parents and teachers. Additionally, CAT resulted in superior family engagement in treatment, and mothers who participated in CAT reported greater treatment satisfaction than did mothers who participated in standard evidence-based treatment (Gerdes et al., 2021).

Teachers' intervention implementation

Teacher involvement is an important component of treatment for ADHD and other mental health disorders through teachers' participation in school-based interventions. Research has identified factors that impact teachers' implementation of classroom-based interventions. For example, teachers' intervention implementation may depend in part on their knowledge about relevant topics. Specifically, teachers reported that they would put more effort into classroom interventions for a child with ADHD after receiving training on the management of ADHD and disability legislation, as compared to after training on either topic alone (Dielmann, 2005). Teachers' participation in classroom-based treatments for ADHD also may be affected by cultural factors, as teachers recommend different treatments to students and families based on cultural factors pertaining both to themselves and to students. Specifically, teachers in North America, South America, and the Caribbean recommended different treatments for students with ADHD, with teachers in North America more frequently endorsing a combination of pharmacological and psychological treatment (Palacios-Cruz et al., 2013). Additionally, U.S. teachers are more likely to recommend classroom modification, an intervention requiring less parental involvement, for ethnic-minority students with ADHD than for ethnic-majority students with ADHD (Wood et al., 2009). European American teachers also use harsher disciplinary methods in response to ADHD-

related classroom behaviors for African American/Black students than for European American students (Harris, 2013), a finding that may generalize to the treatment context.

Overall, higher-quality intervention implementation is associated with desired child and parent treatment outcomes. More specifically, when teachers' adherence to a behavioral intervention increases due to enhanced consultation and implementation planning, student outcomes are enhanced as well (Hagermoser Sanetti et al., 2015). Teachers' competence in delivering a bullying prevention program and their integration of components of that program into general classroom instruction is related to greater students engagement in the intervention and improved outcomes (Biggs et al., 2008; Goncy et al., 2015; Hirschstein et al., 2007). Considering the impact of different aspects of implementation, better treatment adherence and higher-quality treatment delivery are both related to desired student outcomes in bullying and drug use prevention programs (Biggs et al., 2008; Goncy et al., 2015; Pettigrew et al., 2015). Notably, a rapport index developed by researchers to represent both teacher engagement of students and student responsiveness was more highly related to student outcomes than was either teacher-reported or observed fidelity, as examined within the context of a classroom-based nutrition education program (Resnicow et al., 1998). The qualitative, relational elements of implementation appear to drive the relationship between implementation and outcomes.

Research on teacher intervention implementation also has focused on ADHD more specifically. For example, research has found that teacher adherence to a DRC intervention is stable over the course of an entire school year (Vujnovic et al., 2013). Findings from a different study suggest that moderately high levels of parent and teacher adherence to a DRC intervention last up to 4 months (Murray et al., 2008). Research also suggests that greater teacher adherence to a classroom-based intervention for ADHD may be related to students' classroom performance. Teacher adherence also is positively related to parent participation in interventions (Murray et al., 2008). Additionally, a questionnaire has been developed to assess teacher investment when implementing a classroom-based intervention for ADHD; preliminary research supports the psychometric and clinical properties of the Teacher Investment Questionnaire (TIQ; Power et al., 2009). Research has identified a moderate correlation between teachers' integrity in implementing behavior intervention plans for students with inattention and/or hyperactivity/impulsivity and increased student academic engagement and reduced disruptive behavior (Willes, 2017). At the same time, however, one study found no significant relationship between teacher integrity in implementing a DRC intervention and student outcomes (Vujnovic, 2009).

Although much of the research on teachers' role in treatment has focused on intervention implementation, additional aspects of teacher involvement exist as well. Limited consideration, however, has been given to the quality of the teacher–clinician relationship in clinician-facilitated interventions and the possible impact of this relationship on child and family treatment outcomes. One study found that teachers who reported greater satisfaction with clinicians in a clinician-facilitated intervention completed more intervention components than did teachers who were less satisfied with clinicians (Vujnovic, 2009). Research also has examined the role of other mental health professionals. Within the Family-School Collaborative Consultation Project, for example, the role of the school counselor is conceptualized as facilitating a positive and productive working relationship between parents and teachers (Amatea et al., 2004). Again, as mentioned, the role that teachers play in recommending treatment options and referring families to specific treatments is very important as well. Teachers may be more willing to engage in interventions if students are referred or specific treatment programs are recommended by their colleagues or school administration.

Current study and hypotheses

The current study aims to contribute to the knowledge base about the impact of teacher involvement and engagement in treatment for Latinx youth with ADHD and to consider the role of acculturation across two evidence-based forms of treatment conducted as part of a larger study (see Gerdes et al., 2021). First, it was

predicted that teachers would exhibit greater engagement in treatment when families were referred by their child's teacher/school as compared to when families were referred by other referral sources (as indicated by teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed).

Second, it was predicted that after controlling for relevant pretreatment ratings, a teacher/school referral and greater teacher engagement in treatment (i.e., teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed) would predict better child treatment outcomes (i.e., posttreatment parent and teacher ratings of ADHD symptoms and functional impairment and percentage home- and school-based treatment goals met).

It also was predicted that a teacher/school referral and greater teacher engagement in treatment (i.e., teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed) would predict better parent/family treatment outcomes (i.e., maternal and paternal satisfaction with treatment, therapist ratings of family engagement in treatment, family homework completion, and retention in treatment).

Last, the current study aimed to examine the relationships among parental acculturation and teacher (i.e., teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed), child (i.e., posttreatment parent and teacher ratings of ADHD symptoms and functional impairment and percentage home- and school-based treatment goals met), and parent/family (i.e., maternal and paternal satisfaction with treatment, therapist ratings of family engagement in treatment, family homework completion, and retention in treatment) outcomes. Given the limited research existing on such relationships, no specific predictions were made.

Method

Participants

Participants in the current study included Latinx youth with diagnosed ADHD and their parent(s) and primary teacher who participated in a psychosocial intervention for ADHD as part of a larger research study. Seventy-four youth were initially recruited to participate; of these, 2 did not complete the initial assessment process, 10 did not meet criteria for ADHD, and 1 met exclusion criteria for the larger study, resulting in a final sample size of 61 youth, 61 primary teachers, 61 mothers, and 48 fathers. Most of these 61 youth were male (72.1%), and the mean age was 7.98 years ($SD = 2.57$). Both mothers and fathers in the current study endorsed greater behavioral acculturation toward traditional Latinx culture than U.S. mainstream culture and greater cognitive acculturation toward U.S. mainstream culture than traditional Latinx culture. Most mothers and fathers had lived in the U.S. for more than 10 years (67.2% of mothers and 75.4% of fathers), and Mexico was the most common country of origin for both mothers and fathers (80.3% of mothers and 77.0% of fathers). The average socioeconomic status (SES) for families in the current study was 23.46 on Hollingshead's Four Factor Index of Social Status, consistent with semi-skilled labor (Hollingshead, 1975). See Table 1.

Table 1. Demographic characteristics.

Key demographic characteristics	
Child age, M (<i>SD</i>)	7.98 (2.57)
Child gender	
Male, n (%)	44 (72.1%)
Female, n (%)	17 (27.9%)
Family SES, M (<i>SD</i>)	23.43 (11.13)

Treatment condition	
PMT, n (%)	30 (49.2%)
CAT, n (%)	31 (50.8%)
Maternal country of origin	
México, n (%)	49 (80.3%)
Puerto Rico, n (%)	2 (3.3%)
U.S., n (%)	5 (8.2%)
Other, n (%)	5 (8.2%)
Paternal country of origin	
México, n (%)	47 (77.0%)
Puerto Rico, n (%)	6 (9.8%)
U.S., n (%)	6 (9.8%)
Other, n (%)	2 (3.3%)
Additional demographic characteristics	
Maternal acculturation	
Latinx behavioral acculturation, M (<i>SD</i>)	4.43 (.50)
Latinx cognitive acculturation, M (<i>SD</i>)	2.80 (.54)
Anglo behavioral acculturation, M (<i>SD</i>)	2.46 (.88)
Anglo cognitive acculturation, M (<i>SD</i>)	3.94 (.45)
Paternal acculturation	
Latinx behavioral acculturation, M (<i>SD</i>)	4.13 (.56)
Latinx cognitive acculturation, M (<i>SD</i>)	3.15 (.73)
Anglo behavioral acculturation, M (<i>SD</i>)	2.63 (.83)
Anglo cognitive acculturation, M (<i>SD</i>)	4.04 (.44)
Referral source	
Teacher/school, n (%)	26 (42.6%)
Other, n (%)	35 (57.4%)

Note. SES = socioeconomic status; PMT = parent management training; CAT = culturally adapted treatment.

Procedure

Pretreatment assessment

Families were recruited through partnerships with local schools, a local community center, a local health clinic, and a network of community-based health care and social services centers. Specific recruitment tactics included contacting families in-person at school-sponsored events, distributing flyers, and working with staff members to identify families who might benefit from the program.

A phone screening was conducted to determine initial eligibility. Eligibility criteria included that parents self-identified as Latinx and were fluent in Spanish and that children were between 5 and 13 years old at the time of the assessment, displayed symptoms consistent with ADHD, and did not have existing diagnoses of intellectual disability, autism spectrum disorder, or psychosis. Following informed consent and assent, a comprehensive, multi-informant ADHD assessment was conducted if families met initial eligibility criteria. The family portion of the assessment took 4 hours, with the parent portion conducted in Spanish with a graduate student clinician and the child portion conducted in the child's preferred language (either English or Spanish) with a trained undergraduate research assistant. Parents participated in an unstructured interview and completed a demographic form and measures assessing ADHD symptomatology and functional impairment, parenting stress and family functioning, and acculturation and cultural variables. The measures relevant to the current study are

described below. Children participated in an unstructured interview and completed measures assessing internalizing symptoms. Each family received a \$100 Target gift card upon completion of the assessment.

Following the family assessment, the graduate student clinician met with each child's primary teacher. After obtaining informed consent, the teacher participated in an unstructured interview and completed measures assessing ADHD symptomatology and functional impairment. Each teacher received a \$5 Target gift card upon completion of the assessment.

Treatment

Families whose children met criteria for ADHD and did not meet exclusion criteria for the larger study were randomly assigned to one of two treatment conditions: standard evidence-based parent management training (PMT) or CAT. Both PMT and CAT have resulted in positive outcomes for Latinx children and families (Gerdes et al., 2015, 2021). Four rounds of each treatment condition were conducted, with an approximately equal number of families in each group. For both treatment conditions, an individual makeup session was conducted if a family missed one scheduled group session. If a family missed a subsequent scheduled group session, they were provided the materials from the missed session(s).

PMT consisted of eight weekly 2-hour parent training classes focused on a different skill each session (sessions topics included DRC, Effective Instructions, Positive Attention and Ignoring, Time Out, Token Economy, Planning Ahead, Taking Over the DRC, and Final Tips for Success), taught via didactic instruction, modeling, and role-playing. Additionally, teachers were responsible for implementing a DRC school intervention each day, indicating whether the child successfully met each of several collaboratively established behavioral goals. Specifically, two home-based treatment goals and multiple school-based treatment goals were identified for each participating child by their parent(s), teacher, and clinician. All goals were specific and measurable to facilitate the tracking of children's progress. DRCs were sent home with children, whose parents provided collaboratively established rewards (a small snack, playing a game with the parent, etc.) depending on the child's degree of success that day. Parent sessions were led by a graduate student clinician and a social worker and were conducted in Spanish; they were held in the evening at a university-based outpatient clinic, with snacks and childcare provided. PMT also included weekly meetings between the clinician and each child's teacher, with parents attending the first and last meeting at the school.

CAT consisted of eight weekly 2-hour parent training classes focused on a different skill each session (session topics included DRC, Effective Instructions, Positive Attention and Ignoring, Consistent Consequences, Managing Routines—Homework, Managing Routines—Checklists, Taking Over the DRC, and Final Tips for Success), taught via didactic instruction, modeling, and role-playing. Additionally, teachers were responsible for implementing a DRC school intervention each day, indicating whether the child successfully met each of several collaboratively established behavioral goals, in the same way as described above for PMT. DRCs were sent home with children, whose parents provided collaboratively established rewards, in the same way as described for PMT. Parent sessions were led by a graduate student clinician and a social worker and were conducted in Spanish; they were held in the evening at a community center, with dinner and childcare provided. CAT also included weekly meetings between the clinician and each child's teacher(s) and parent(s) at the school. Additionally, two home visits were conducted for each family enrolled in CAT over the course of treatment to observe skills being implemented in the home setting and support families as needed. Parents received in vivo coaching of their use of learned skills during home visits.

Posttreatment assessment

Following the completion of treatment, parents and teachers again completed measures assessing ADHD symptomatology and functional impairment for each child. Parents also completed a measure assessing satisfaction with treatment.

Measures

The measures of interest for the current study include a demographic form, the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II), the Mexican American Cultural Values Scale (MACVS), the Teacher Investment Questionnaire (TIQ), therapist-rated teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, percentage DRCs correctly completed, the Disruptive Behavior Disorders Rating Scale (DBD Rating Scale), ADHD-FX Scale, percentage home- and school-based goals attained, the Therapy Attitudes Inventory (TAI), therapist-rated quality of family engagement, family homework completion, and retention in treatment.

Demographic form

Parents completed a demographic form, providing information about participating children and parents, such as age, sex, and factors related to SES. Hollingshead Four Factor Index of Social Status (Hollingshead, 1975) was subsequently used to compute SES for each family.

Acculturation

To assess parental behavioral acculturation, parents completed the ARSMA-II (Cuéllar et al., 1995). The ARSMA-II is a 30-item self-report measure of behavioral acculturation, which was completed by parents in Spanish. Items are endorsed on a Likert scale from 1 to 5, with higher numbers indicating greater orientation to Anglo and Mexican/Latinx culture. When scored, the measure results in the Anglo Orientation (AOS) and Mexican/Latinx Orientation (LOS) subscales. This measure has been found to have good psychometric properties in its original form (Cuéllar et al., 1995), as well as when word substitutions are made to make the measure applicable to a greater population (i.e., Gerdes et al., 2021). In the current study, the ARSMA-II demonstrated good reliability, with Cronbach's alphas ranging from .75 to .88 for mothers and fathers across the two subscales.

To assess parental cognitive acculturation, parents additionally completed the MACVS (Knight et al., 2010). The MACVS is a 50-item self-report measure of cognitive acculturation, which was completed by parents in Spanish. Items are endorsed on a Likert scale from 1 to 5, with higher numbers indicating greater orientation toward U.S. mainstream and Latinx American values. When scored, the measure results in the Mainstream Values (MV) and Latinx American Values (LAV) subscales. This measure has been found to have strong psychometric properties (Knight et al., 2010), which were upheld in the current study, with Cronbach's alphas ranging from .69 to .88 for mothers and fathers across the two subscales.

Teacher investment in treatment

Clinicians completed the TIQ (Power et al., 2009) to assess teacher's engagement and investment in intervention implementation. The TIQ has demonstrated acceptable reliability and validity (Power et al., 2009). The scale was varied slightly to be appropriate for use with the intervention in the current study, as has been done in previous research (Power et al., 2009). The 11 resulting items were endorsed by clinicians on a Likert scale from 1 (not at all true) to 4 (very true). Power et al. (2009) found two different versions of the TIQ to have alphas of at least .90. In the current study, the TIQ demonstrated a Cronbach's alpha of .91.

Teacher–clinician relationship

At the end of treatment, the two graduate student clinicians involved in treatment rated the quality of their relationship with each teacher with whom they worked on a Likert scale from 1 (very poor) to 5 (very good). Inter-rater agreement was almost perfect ($\kappa = 0.85$, $p < .01$; Landis & Koch, 1977). When the two clinicians disagreed, they discussed and decided on a final rating collaboratively. This final rating was used in all analyses for the current study.

Teacher intervention implementation

Several aspects of teacher intervention implementation were calculated. Specifically, the graduate student clinicians kept track of the number of occasions on which each teacher cancelled and no-showed scheduled DRC meetings, in relation to the total number of initially scheduled meetings. At the end of treatment, the percentages of DRC meetings cancelled and no-showed were calculated for each teacher. Additionally, following treatment, all DRCs for each child were evaluated for correctness, and the percentage DRCs correctly completed was determined for each teacher.

ADHD symptomatology

Parents and teachers completed the DBD Rating Scale (Gerdes et al., 2013; Pelham et al., 1992), a parent- and teacher-report measure of symptoms of ADHD, oppositional/defiant disorder, and conduct disorder, based on the *DSM* (Pelham et al., 1992). Respondents endorse the 45 items that make up the scale on a Likert scale from 0 (symptom is not at all a problem) to 3 (symptom is very much a problem). Teachers completed the English-language version, which has good internal consistency, test-retest reliability, and treatment outcome validity (as described in Pelham et al., 2005). Parents completed the Spanish-language version of the DBD Rating Scale (DBD-S), which has similar psychometric properties (Gerdes et al., 2013). In the current study, the parent and teacher DBD Rating Scales demonstrated Cronbach's alphas ranging from .84 to .91 across pretreatment and posttreatment.

Functional impairment

Parents and teachers additionally completed the ADHD-FX Scale (Haack et al., 2016). The ADHD-FX Scale assesses ADHD-related functional impairment. Parents and teachers respond to each of the 32 items that make up the scale by indicating how much each behavior affects the child in their day-to-day life or at school, on a Likert scale from 0 (not at all) to 3 (a lot). An overall impairment score and home and school subscale scores can be calculated. Parents completed the Spanish-language version of the parent ADHD-FX Scale, which has good reliability, divergent and convergent construct validity, and cultural properties (Haack et al., 2016), while teachers completed the English-language version of the teacher ADHD-FX Scale. In the current study, the parent and teacher ADHD-FX Scales demonstrated Cronbach's alphas ranging from .84 to .93 across pretreatment and posttreatment.

Treatment goals attained

Two home-based treatment goals and several school-based treatment goals were collaboratively established for each participating child by their parent(s), teacher, and clinician. Specifically, as described above, clinicians developed school-based treatment goals based on the concerns teachers reported about each individual student, making sure that goals were specific and measurable to facilitate tracking. For example, a school-based goal for one child was to stay in his seat in the afternoon with four or fewer reminders from his teacher. Throughout the course of treatment, teachers tracked children's progress toward each school-based goal on a daily basis, providing data to the clinicians that were used to graphically represent and monitor progress toward goals. The same two specific, measurable home-based goals were implemented for each child, given the significant overlap between the concerns parents reported. The goals were for the child to demonstrate compliance with parental instructions 75% of the time (as determined by parental tracking of the number of reminders needed to complete the same routine each day over the course of treatment, and calculated by clinicians during each session), and for the child to complete homework and daily routines in less time and with less conflict. Parents similarly tracked their child's progress toward these two goals, and clinicians collected these data to monitor progress toward home-based goals as well. At the end of treatment, it was determined whether each of the goals had been achieved, and the percentage of home- and school-based goals attained was calculated for each child.

Treatment satisfaction

To assess parental satisfaction with treatment, parents completed the TAI (Eyberg, 1993). The TAI assesses consumer satisfaction with treatment and is designed to be appropriate with respect to various treatment modalities. Adequate psychometric properties have been demonstrated (Brestan et al., 1999). The 10 items making up the scale are endorsed on a Likert scale from 1 (indicating dissatisfaction) to 5 (indicating satisfaction). Items inquire about topics such as their opinion of treatment in general, specific treatment techniques, and improvement noted during treatment. The measure was translated into Spanish for use in the current study. The TAI has been found to have acceptable psychometric properties, including good reliability and validity (Brestan et al., 1999). In the current study, the TAI demonstrated a Cronbach's alpha of .83 when completed by mothers ($n = 61$) and a Cronbach's alpha of .89 when completed by fathers ($n = 47$).

Family engagement in treatment

Following the completion of treatment, the graduate students clinicians and the treatment co-leader rated each parent's engagement in treatment on a Likert scale from 1 (very low) to 5 (very high). A mean rating was computed for each parent, and in cases in which two parents participated from the same family, a mean family engagement variable was computed.

Homework completion

Families were given weekly homework assignments, which were subsequently checked for completion. Percentage homework completed overall was determined for each family at the end of treatment.

Family retention in treatment

Families who completed the last planned treatment session were considered to have been retained in treatment, while families who did not achieve this were considered to have dropped out of treatment.

Results

Preliminary analyses

Correlations were examined among outcome variables on the same scale to determine whether highly correlated variables should be combined. Specifically, a Pearson correlation was examined between teacher outcome variables (percentage DRC meetings no-showed and percentage DRC meetings cancelled), with no significant relationship detected ($r = .08$, ns). Pearson correlations also were examined among child outcomes (posttreatment parent and teacher reports of hyperactivity/impulsivity and inattention and functional impairment and percentage of home- and school-based goals achieved). Although two statistically significant positive correlations were revealed among posttreatment parent and teacher reports of hyperactivity/impulsivity and inattention, neither were above the .7 cutoff indicating multicollinearity (Tabachnick & Fidell, 1996).

Relatively low correlations between parent and teacher report of ADHD symptoms such as these are not unexpected based on previous research, particularly within Latinx families (Grace, Kapke, Castro, & Gerdes, 2017). No statistically significant relationships were detected between posttreatment parent and teacher reports of functional impairment ($r = -.14$, ns) or between percentage of home- and school-based goals achieved ($r = .09$, ns). Pearson correlations also were examined between parent/family treatment outcomes (mother and father treatment satisfaction scores), revealing a statistically significant positive correlation ($r = .62$, $p < .001$) that did not reach the .7 threshold commonly accepted as indicative of multicollinearity (Tabachnick & Fidell, 1996). Thus, no outcome variables were combined.

Next, all teacher (i.e., referral source, teacher investment in treatment, teacher-clinician relationship quality, percentage DRC meetings cancelled, percentage DRC meetings no-showed, and percentage of DRCs correctly

completed), child (i.e., parent and teacher ratings of ADHD symptoms and functional impairment and percentage home- and school-based goals achieved), and parent/family outcome variables (i.e., maternal and paternal satisfaction with treatment, family engagement in treatment, homework completion, and retention in treatment) were examined with respect to key demographic variables (i.e., child gender, child age, family SES, and treatment condition). First, Pearson correlations between child age and family SES with teacher, child, and parent/family outcome variables were examined. Only one statistically significant correlation emerged. Specifically, a negative relationship between child age and percentage of DRCs correctly completed emerged, $r = -.45, p < .001$.

Next, a series of independent-samples *t* tests was conducted to examine child gender and treatment condition (i.e., PMT and CAT) with respect to continuous teacher, child, and parent/family outcome variables. Bonferroni corrections were used and unequal variance was accounted for as appropriate. Only one significant difference was detected with respect to gender. Teachers rated boys as more impaired in the classroom than they rated girls, $t(46.47) = 2.16, p < .05$. Several significant differences also emerged with respect to treatment condition. Mothers who participated in CAT reported greater satisfaction with treatment than did mothers who participated in PMT, $t(56) = -2.33, p < .05$, families who participated in CAT completed a greater percentage of their weekly homework than did families who participated in PMT, $t(45.22) = -3.92, p < .001$, and teachers who participated in CAT completed a greater percentage of DRCs correctly than did teachers who participated in PMT, $t(49.65) = -2.53, p < .05$.

Finally, Chi-square tests of independence were conducted to examine child gender and treatment condition with respect to the categorical family outcome variable, retention. No significant results were noted. As more than 20% of expected cell counts were less than 5 in both cases, a variation known as the *N*-1 chi square test also was performed (Busing et al., 2016; Campbell, 2007), with findings remaining nonsignificant.

Primary analyses

Impact of a teacher/school referral to treatment

To examine the first hypothesis that teachers would exhibit greater engagement in treatment when families were referred by their child's teacher versus by another referral source, independent-samples *t* tests were conducted; again, Bonferroni corrections were used and unequal variance was accounted for as appropriate. Specifically, based on referral source (i.e., teacher/school vs. others), mean differences were examined with respect to teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed. Results did not reveal any significant differences based on referral source.¹

Impact of teacher engagement in treatment on child outcomes

To examine the second hypothesis that a teacher/school referral and greater teacher engagement in treatment would predict better child treatment outcomes, correlations were first examined between predictor variables and outcome variables. Specifically, correlations were examined between teacher/school referral and teacher engagement variables (teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed) and child outcomes while controlling for relevant pretreatment ratings of symptoms and impairment and demographic variables that previous analyses identified as related to outcome variables. As such, correlations controlled for parent and teacher pretreatment report of symptoms and functional impairment when examining parent and teacher posttreatment report of symptoms and functional impairment and controlled for child age and treatment type when examining percentage DRCs correctly completed. Pearson and Spearman correlations were utilized for continuous and categorical variables, respectively. Results indicate that percentage teacher meetings no-showed was significantly and negatively related to percentage school goals

achieved ($r = -.27, p < .05$), and referral source was significantly and positively related to parent report of hyperactive/impulsive symptoms ($r = -.26, p < .05$; see Table 2).

Table 2. Correlations between predictors and child and parent/family outcome variables.

	Referral source	Teacher investment in treatment	Teacher–clinician relationship quality	% Teacher meetings cancelled	% Teacher meetings no-showed	% DRCs correctly completed
Child outcomes						
Parent DBD inattention	-.12	.05	-.06	-.06	.07	.18
Parent DBD hyperactivity/impulsivity	-.26*	.02	-.07	-.04	.07	.09
Parent ADHD-FX impairment at home	-.05	.20	.05	-.00	-.12	.14
Teacher DBD inattention	.09	.05	.17	-.09	.08	-.11
Teacher DBD hyperactivity/impulsivity	-.01	.03	.07	-.02	-.03	-.01
Teacher ADHD-FX impairment at school	.12	-.01	.06	.16	.03	-.25
% Home goals achieved	-.11	.08	.09	-.01	-.03	.13
% School goals achieved	.12	.11	-.08	-.12	-.27*	.16
Parent/family outcomes						
Mother treatment satisfaction	.31*	.29*	.31*	-.12	-.25	-.02
Father treatment satisfaction	.29	.13	.00	-.10	-.05	.07
Family engagement	-.10	.08	-.01	.03	-.04	-.01
Homework completion	.09	-.09	-.21	.20	.07	-.16
Retention	–	.02	-.09	.08	.12	.17

Note. Pearson’s correlations were used for continuous variables, while Spearman’s correlations were used for categorical variables. Partial correlations were used to control for parent and teacher pretreatment report of symptoms and functional impairment when examining parent and teacher posttreatment report of symptoms and functional impairment, for gender when examining teacher report of functional impairment in the classroom, and for treatment condition when examining maternal satisfaction with treatment and homework completion.

ADHD = attention-deficit/hyperactivity disorder; ADHD-FX = ADHD Functional Impairment Scale; DBD = Disruptive Behavior Disorders Rating Scale; DRC = Daily Report Cards.

* $p \leq .05$.

Impact of teacher engagement in treatment on parent/family outcomes

To examine the third hypothesis that a teacher/school referral and greater teacher engagement in treatment would predict better parent/family treatment outcomes, correlations were first examined between predictor variables and outcome variables. Specifically, correlations were examined between teacher/school referral and teacher engagement variables (teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed) and parent/family outcomes while controlling for relevant demographic variables that previous analyses identified as related to outcome variables. As such, correlations controlled for child age and treatment type when examining percentage DRCs correctly completed and controlled for treatment condition when examining maternal satisfaction with treatment and homework completion. Again, Pearson and Spearman correlations were utilized for continuous and categorical variables, respectively.

Results indicate that referral source was significantly related to maternal satisfaction with treatment ($r = .31, p < .05$), teacher investment in treatment was significantly related to maternal satisfaction with treatment ($r = .29, p < .05$), and teacher–clinician relationship quality was significantly related to maternal satisfaction with treatment ($r = .31, p < .05$; see Table 2). A Chi-square test of independence also was conducted to examine the relationship between the categorical predictor and outcome variables of referral source and retention, respectively; no significant relationship was noted, $\chi^2 = .75, ns$. As more than 20% of expected cell counts were less than 5, the $N-1$ Chi-square test also was performed (Busing et al., 2016; Campbell, 2007), with findings remaining the same.

Follow-up regression

Finally, a hierarchical linear regression was conducted based upon the results of the above correlations, as multiple demographic and predictor variables were significantly correlated with a single outcome variable—maternal satisfaction with treatment. Treatment condition was entered at step 1, dummy coded with PMT as 1 and CAT as 2. Referral source (dummy coded with teacher/school referral as 1 and all other referral sources as 0), teacher investment in treatment, and teacher–clinician relationship quality were entered at step 2. The overall model was significant at step 2, $F(4, 53) = 4.16, p < .01; R^2 = .24, p < .05$. Treatment condition and referral source were both significant and positive predictors of maternal treatment satisfaction, $\beta = .35, p < .01$ and $\beta = .25, p < .05$, respectively. See Table 3.

Table 3. Hierarchical linear regression predicting mother treatment satisfaction.

	B	SE B	β	t	R²	ΔR^2
Step 1					.09	.09
Treatment condition	2.07	.89	.30	2.33*		
Step 2					.24	.15
Treatment condition	2.44	.86	.35	2.85*		
Referral source	1.76	.87	.25	2.03*		
Teacher investment in treatment	.85	1.27	.14	.67		
Teacher–clinician relationship quality	.40	.64	.13	.63		

* $p \leq .05$; ** $p \leq .01$.

Impact of acculturation

Last, correlations were used to address the final aim of the current study, that of exploring the relationships among parental acculturation and the teacher, child, and parent/family outcomes. Specifically, correlations were conducted among parental cognitive and behavioral orientation toward both traditional Latinx culture and mainstream U.S. culture and teacher (teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs

correctly completed), child (posttreatment parent- and teacher-reported symptoms of hyperactivity/impulsivity, inattention, and functional impairment, percentage school-based goals achieved, and percentage home-based goals achieved), and parent/family outcomes (maternal and paternal satisfaction with treatment, family engagement in treatment, homework completion, and family retention in treatment). Pearson and Spearman correlations were used as appropriate for continuous and categorical variables, respectively, and partial correlations were used to control for demographic variables significantly related to outcomes variables and relevant pretreatment ratings of symptoms and impairment. Specifically, child age and treatment condition were controlled for when examining percentage DRCs completed correctly, child gender was accounted for when examining teacher report of impairment, and treatment condition was controlled for when examining maternal satisfaction with treatment and percentage homework completed. Additionally, correlations examining posttreatment parent and teacher report of ADHD symptoms and functional impairment accounted for pretreatment parent and teacher ratings of ADHD symptoms and functional impairment.

Significant and negative correlations were detected between father cognitive orientation toward both traditional Latinx culture and mainstream U.S. culture and teacher investment in treatment ($r = -.36, p < .01$, and $r = -.34, p < .05$, respectively). Father orientation toward mainstream U.S. culture also was significantly and negatively related to the quality of the teacher–clinician relationship ($r = -.31, p < .05$). Maternal cognitive orientation toward traditional Latinx culture also was significantly and positively related to maternal satisfaction with treatment ($r = .39, p < .01$). Maternal behavioral orientation toward mainstream U.S. culture was significantly and negatively related to posttreatment parent report of inattention ($r = -.30, p < .05$), while father behavioral orientation toward traditional Latinx culture was significantly and positively related to posttreatment parent report of inattention ($r = .41, p < .01$). Maternal behavioral orientation toward mainstream U.S. culture also was significantly and negatively related to posttreatment parent report of hyperactivity/impulsivity ($r = -.39, p < .01$). Additionally, father behavioral orientation toward mainstream U.S. culture was significantly and positively related to posttreatment teacher report of inattention, hyperactivity, and functional impairment ($r = .35, p < .05$, $r = .36, p < .01$, and $r = .30, p < .05$, respectively), as well as significantly and negatively related to posttreatment parent report of functional impairment ($r = -.32, p < .05$). Finally, maternal cognitive orientation toward mainstream U.S. culture was significantly and positively related to maternal satisfaction with treatment, $r = .39, p < .01$. See Table 4.

Table 4. Correlations among parental acculturation and teacher, child, and parent/family outcome variables.

	Behavioral acculturation				Cognitive acculturation			
	Maternal Latinx orientation	Maternal U.S. orientation	Paternal Latinx orientation	Paternal U.S. orientation	Maternal Latinx orientation	Maternal U.S. orientation	Paternal Latinx orientation	Paternal U.S. orientation
Teacher outcomes								
Teacher investment in treatment	.01	-.15	-.11	-.23	-.02	-.11	-.36**	-.34*
Teacher–clinician relationship	-.02	-.10	-.12	-.16	.05	-.01	-.25	-.31*
% Teacher meetings cancelled	.04	-.09	.15	-.07	.12	.24	.08	.09
% Teacher meetings no-showed	.05	-.04	.09	.11	-.10	-.01	-.17	-.01
% DRCs correctly completed	-.26	.20	-.14	.15	-.08	-.05	.06	.11
Child outcomes								
Parent DBD inattention	.22	-.30*	.41**	-.24	-.27	-.15	-.02	.13
Parent DBD hyperactivity/impulsivity	.26	-.39**	.30*	-.15	-.02	.05	-.02	.05
Teacher DBD inattention	-.31*	.24	-.23	.35*	-.00	.08	-.18	.07
Teacher DBD hyperactivity/impulsivity	-.26	.10	-.24	.36**	.19	-.17	-.13	-.08
Parent ADHD-FX	.13	-.21	.32*	-.32*	.10	-.12	.15	-.04
Teacher ADHD-FX	-.25	.14	-.24	.30*	-.07	-.06	-.17	-.01
% Home goals achieved	-.12	-.19	-.21	-.04	.11	-.03	-.04	-.04
% School goals achieved	-.08	-.10	-.16	-.19	-.12	-.11	-.08	-.19
Parent/family outcomes								
Maternal Tx satisfaction	.12	.08	-.28	.08	.18	.39**	-.02	-.16
Paternal Tx satisfaction	.03	-.02	-.11	-.11	-.06	.00	.07	-.08

Family engagement in treatment	-.05	-.24	.10	.05	.14	.03	-.10	.18
Homework completion	-.05	-.06	.04	.14	.02	.11	-.02	.10
Retention	.07	-.20	.18	.21	.15	.04	.16	.24

Note. Pearson's correlations were used for continuous variables, while Spearman's correlations were used for categorical variables. Partial correlations were used to control for parent and teacher pre-treatment report of symptoms and functional impairment when examining parent and teacher post-treatment report of symptoms and functional impairment, for gender when examining teacher report of functional impairment in the classroom, and for treatment condition when examining maternal satisfaction with treatment and homework completion.

ADHD = attention-deficit/hyperactivity disorder; ADHD-FX = ADHD Functional Impairment Scale; DBD = Disruptive Behavior Disorders Rating Scale; DRC = Daily Report Cards; tx = treatment.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Discussion

The aim of the current study was to examine the impact of teacher engagement in psychosocial treatment for ADHD in a sample of Latinx youth and to consider the role of acculturation. The current study adds to the literature base in that it examined teacher engagement in a different context and in an underserved, underrepresented population. Findings demonstrate that teachers in the current study were equally engaged in treatment, regardless of the source of the original referral to treatment. Findings also indicate that certain aspects of teacher engagement in treatment are related to child and parent/family treatment outcomes. These findings add support to findings from previous research indicating that high-quality teacher intervention implementation, as evidenced by adherence to intervention components and positive relationships, is related to improved outcomes for families, including both youth and parents (Hagermoser Sanetti et al., 2015; Murray et al., 2008). These findings are especially important to consider within the context of Latinx youth and families, especially as results also highlight the relationships between parental acculturation and teacher, child, and parent/family outcomes.

Impact of a teacher/school referral to treatment

The first hypothesis of the current study hypothesized that teachers would exhibit greater engagement in treatment when families were referred by their child's teacher/school as compared to when families were referred by other referral sources (as indicated by teacher investment in treatment, teacher-clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed). No significant differences in teacher engagement in treatment based on referral source were revealed. Although these findings were surprising, they do fit well with some previous research. Specifically, research has identified factors that influence teachers' engagement in interventions, such as the perceived usefulness of a specific intervention (Biggs et al., 2008), as well as factors influencing the degree to which teachers find interventions to be acceptable, which may then influence their engagement in that intervention. It may be that the engagement in treatment exhibited by teachers in the current study depended not only on referral source but also on factors such as these. As these factors may not have varied greatly from teacher to teacher in the current study, this may explain why teacher engagement did not significantly vary based on referral source.

Although unexpected, the fact that no significant differences in teacher engagement in treatment based on referral source were revealed suggests that teachers in the current study were equally engaged in treatment, regardless of whether a given family's referral to treatment came from the teacher/school or from another source. Teachers adhered to program components (completion of DRCs and attendance of weekly meetings) at an approximately equal rate, and they were rated by clinicians as approximately equally invested in treatment and having approximately equivalent relationships with clinicians. These findings suggest that teachers were motivated to work with students, families, and clinicians to improve students' classroom behavior and outcomes no matter who made the initial referral to treatment.

This finding is especially important within the context of the Latinx youth and families who participated in treatment in the current study. Many Latinx parents hold a broad definition of education based on cultural values such as *familismo*, *respeto*, *personalismo*, and *colectivismo* and want to have a close, personal relationship with their children's teachers that also is beneficial to their children's education (Calzada, 2010; Hill & Torres, 2010). This often stands in contrast to many U.S. teachers' expectations for the parent-teacher relationship (Zarate, 2007). Additionally, Mexican-American students have endorsed expectations for education and their interactions with teachers that contradict those of many U.S. teachers, and some of these students feel ignored and criticized by teachers (Andrews, 2016). As such, it is especially meaningful to see teachers

actively engaging with Latinx parents and students through participation in treatment, regardless of whether that same teacher or another person initially referred the family to treatment.

Impact of teacher engagement in treatment on child outcomes

The hypothesis that a teacher/school referral and greater teacher engagement in treatment (as evidenced by teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed) would predict better child treatment outcomes (posttreatment parent- and teacher-reported symptoms of hyperactivity/impulsivity, inattention, and functional impairment, percentage school-based goals achieved, and percentage home-based goals achieved) was partially supported. Specifically, correlations revealed that referral source was significantly related to parent posttreatment ratings of hyperactivity/impulsivity, after controlling for parent pretreatment rating of hyperactivity/impulsivity. Fewer symptoms of hyperactivity/impulsivity were reported posttreatment for children who were referred to treatment by their teacher. Correlations also revealed that percentage teacher meetings no-showed was related to percentage school-based goals achieved, such that a greater percentage of school-based goals was achieved when teachers no-showed fewer meetings.

These findings fit well with previous research, which has identified that a high degree of teacher intervention adherence is related to enhanced student outcomes, including for students with ADHD (Hagermoser Sanetti et al., 2015; Willes, 2017). At the same time, however, previous research also has found that the more qualitative, relational elements of teacher intervention implementation, such as overall quality and rapport, are related to student outcomes (Pettigrew et al., 2015; Resnicow et al., 1998). In the current study, on the other hand, the qualitative, relational elements of teacher intervention implementation (teacher investment and the teacher–clinician relationship) were not related to child outcomes. One possible explanation for these findings may have to do with the way teacher engagement was measured in the current study. Specifically, it is possible that teacher engagement could have been measured in additional ways that would have more accurately captured variation among teachers. For example, previous research has accounted for teachers' competence in implementing interventions and student–teacher rapport (Goncy et al., 2015; Resnicow et al., 1998), neither of which were measured in the current study and which may capture distinct aspects of teacher intervention implementation. Nonetheless, although the qualitative, relational aspects of teacher intervention implementation were not found to be related to child outcomes in the current study, these elements of teacher intervention implementation were indeed found to be related to parental treatment outcomes. Specifically, as will be discussed further below, teacher investment in treatment and the quality of the teacher–clinician relationship were related to maternal satisfaction with treatment.

Again, these findings must be understood within the context of the Latinx population. While some of the previous research linking the quality of teacher intervention implementation to student outcomes has included Latinx students (i.e., Biggs et al., 2008), no studies have focused specifically on Latinx students to examine how teacher implementation impacts their outcomes in particular. The current study adds to the existing literature base by extending previous findings to a sample of exclusively Latinx students, finding that aspects of teacher intervention implementation are related to student outcomes.

Impact of teacher engagement in treatment on parent/family outcomes

The hypothesis that a teacher/school referral and greater teacher engagement in treatment (as evidenced by teacher investment in treatment, teacher–clinician relationship quality, percentage teacher meetings cancelled, percentage teacher meetings no-showed, and percentage DRCs correctly completed) would predict better parent/family treatment outcomes (maternal and paternal satisfaction with treatment, family engagement in treatment, homework completion, and family retention in treatment) was partially supported. Specifically, correlations revealed that referral source, teacher investment in treatment, and teacher–clinician relationship

quality were all statistically significantly related to maternal satisfaction with treatment, after controlling for treatment condition. Mothers reported being more satisfied with treatment when their child was referred to treatment by their teacher, when teachers were more invested in treatment, and when the teacher–clinician relationship was rated more highly. Of these variables, only referral source was found to be a statistically significant predictor of maternal satisfaction with treatment when the three predictor variables were simultaneously entered in a linear regression already accounting for treatment condition.

These findings also relate well to previous research, as teacher engagement in treatment and parental participation in treatment have been found to be positively related to one another (Murray et al., 2008). In the current study, this finding is extended to highlight the positive relationship between teacher engagement in treatment and maternal satisfaction with treatment. In the case of parent/family outcomes, as opposed to the child outcomes described above, this finding fits well with previous research, which found that the subjective quality of teacher intervention implementation and the relationship within which it is delivered are related to outcomes (Pettigrew et al., 2015; Resnicow et al., 1998).

As described, many Latinx parents feel dissatisfied with their relationship with their child’s teacher and school (Olivos, 2004). They are often interested in frequent contact, friendly interactions, and collaboration to facilitate their child’s academic achievement (Griego Jones, 2003; Zarate, 2007). These expectations are often based in part on the cultural values of *familismo*, *respeto*, *personalismo*, and *colectivismo* (Calzada, 2010; Hill & Torres, 2010). Many U.S. teachers, however, expect and create more formal relationship with parents, communicating at scheduled times such as conferences or if a specific concern arises (Amatea et al., 2004). Given this disconnect, the findings of the current study make sense and take on greater meaning. When teachers in the current study exhibited greater engagement in treatment and with parents (as evidenced by higher TIQ and teacher–clinician relationship scores), Latinx parents may have perceived teachers as behaving more in line with the cultural values important to them with regard to education and thus indicated greater satisfaction with treatment. As mothers are the parent more frequently involved in childcare and education, this may have been especially salient for Latina mothers in the current study.

Impact of acculturation

Last, regarding the aim of examining relationships among acculturation and teacher, child, and parent/family outcomes, several significant relationships were found. Specifically, with respect to fathers’ acculturation, significant and negative relationships were revealed between father cognitive orientation toward both traditional Latinx culture and mainstream U.S. culture and teacher investment in treatment, indicating that as fathers endorsed greater orientation toward each culture, teachers were less invested in treatment. Similarly, a significant and negative relationship was detected between father cognitive orientation toward mainstream U.S. culture and the quality of the teacher–clinician relationship, meaning that as fathers endorsed greater orientation toward mainstream U.S. culture, teachers had less positive relationships with clinicians. Additionally, a significant and positive relationship was revealed between father behavioral orientation toward traditional Latinx culture and posttreatment parent report of inattention, such that as fathers endorsed greater orientation toward traditional Latinx culture, children were reported to experience more functional impairment following treatment. At the same time, significant and positive relationships were noted between father behavioral orientation toward mainstream U.S. culture and posttreatment teacher report of inattention, hyperactivity, and functional impairment, such that when fathers endorsed greater orientation toward mainstream U.S. culture, children were rated as experiencing more symptoms of ADHD and functional impairment. Finally, a significant and negative relationship was detected between father behavioral orientation toward mainstream U.S. culture and posttreatment parent report of functional impairment, indicating that as fathers endorsed greater orientation toward mainstream U.S. culture, children were rated as demonstrating less functional impairment.

With respect to mothers' acculturation, maternal behavioral orientation toward mainstream U.S. culture was found to be significantly and negatively related to posttreatment parent report of both inattention and hyperactivity/impulsivity, indicating that as mothers endorsed greater orientation toward mainstream U.S. culture, children were reported to exhibit fewer symptoms of ADHD. Additionally, significant and positive relationships also were noted between both maternal cognitive orientation toward traditional Latinx culture and maternal cognitive orientation toward mainstream U.S. culture and maternal satisfaction with treatment, meaning that mothers who endorsed greater orientation toward each culture also endorsed greater satisfaction with treatment.

These findings highlight the significant relationships between aspects of parental acculturation and outcome variables of interest in the current study, further contextualizing the results of the current study. Specifically, it appears that parental acculturation is related to aspects of teacher intervention implementation and child and parent/family treatment outcomes. Nonetheless, a clear and specific pattern did not emerge. These initial findings suggest areas for future research, including incorporating acculturation into statistical analyses as covariates. Such analyses would further elucidate the nature of the relationships among acculturation and cultural values, teacher intervention implementation, and youth and family treatment outcomes. While previous research on these relationships is limited, research has identified that Latinx parents are very responsive to specific teacher invitations to participate in their children's education and in treatment programs (Quiocho & Daoud, 2006; Ramirez, 2003), likely based on the broad definition of education held by many Latinx parents (Zarate, 2007) and the cultural values of *personalismo* and *colectivismo*. At the same time, previous research also has found that teacher invitations for parental participation within the context of a treatment program for youth with behavior concerns were associated with improved child treatment outcomes (Coutts et al., 2012). Further clarification of the exact nature of these relationships is still needed and will be important in informing efforts to maximize high-quality teacher intervention implementation and treatment outcomes for Latinx youth and families.

Limitations and future directions

The current study is subject to several limitations. Specifically, the composition of the sample was relatively homogenous, as participants were Latinx youth and parents with similar profiles of acculturation residing in the same midsized Midwestern city. This may limit the generalizability of findings to Latinx individuals and families more generally, as the Latinx population is heterogeneous in many ways. Future research should aim to recruit a sample of Latinx youth and parents that is more diverse with respect to geographic location, language use, and acculturation, so as to best understand the impact of teacher engagement in treatment for this group and facilitate the provision of high-quality services. The sample used in the current study also is limited in that it was comprised of more boys than girls. Future research also should aim to recruit more girls as participants as well as to consider factors unique to girls with ADHD that may impact the extent to which the benefit from teacher engagement in treatment.

Another limitation of the current study is the lack of data available on participating teachers. Such data would ideally include cultural factors, as these variables have been found to be related to teachers' perceptions of psychosocial interventions in previous research (Palacios-Cruz et al., 2013). These perceptions of specific interventions, as well as teachers' knowledge about ADHD, have been found to be related to teacher intervention implementation (Biggs et al., 2008; Dielmann, 2005). Collecting data on these constructs would provide further information about the ways in which teachers impact youth and family treatment outcomes.

Additionally, the current study is limited in that it relied upon clinician report of teacher engagement in treatment. Self-report measures of teacher engagement in treatment were deliberately excluded, as teachers tend to rate their own intervention implementation more highly than do others (Hansen et al., 2014).

Nonetheless, future research could extend the findings of the current study by including a parent-report measure of teacher engagement in treatment. The inclusion of such measures would serve to corroborate or contrast with clinician report of teacher engagement and in doing so would also extend the research on measuring teacher engagement.

Last, the current study was not able to account for additional factors that may impact both teacher engagement in treatment and child and parent/family outcomes, as these were beyond the scope of the current study. Future research could examine how teacher engagement in treatment and child and parent/family outcomes may be influenced by such factors, including the parent–teacher relationship, as recent research suggests this relationship mediates and/or moderates the effects of psychosocial interventions (Sheridan et al., 2012; Witte & Sheridan, 2014). Examination of the impact of the parent–teacher relationship would be especially important for a similar sample of Latinx families, as many barriers threaten the development of a positive parent–teacher relationship for Latinx families and their children’s teachers, including both practical and cultural barriers (Kouyoumdjian et al., 2003; Zarate, 2007). Similarly, the current study did not account for factors that may impact teachers’ engagement in treatment, including factors such as knowledge about ADHD and specific interventions that have been found to be related to teacher engagement in classroom-based interventions (Anderson et al., 2012; Dielmann, 2005). Future research should account for these and other relevant factors, perhaps including teachers’ acculturation, so as to gain a better understanding of teacher engagement in treatment. The current study was also unable to account for the potential impact on parental engagement in treatment and treatment outcomes of differences between the treatment conditions, such as home visits, as this was beyond the scope of the current study.

Summary and clinical implications

The current study examined the impact of teacher engagement in psychosocial treatment for Latinx youth with ADHD and their families, including a consideration of the role of acculturation. The study adds to the literature base by using a sample from a population that is underserved and underrepresented in research. Although the first hypothesis that a teacher/school referral to treatment would predict greater teacher engagement in treatment was not supported, this finding is encouraging in that it indicates that teachers were equally engaged in treatment, regardless of referral source. Meanwhile, the second and third hypotheses, that greater teacher engagement in treatment would predict better child and parent/family outcomes, were partially supported. Referral source was significantly and negatively related to posttreatment parent report of hyperactivity/impulsivity, such that parents reported fewer symptoms of hyperactivity/impulsivity following treatment when their child had been referred to treatment by their teacher/school, while percentage teacher meetings no-showed was significantly and negatively related to percentage school-based goals achieved. Additionally, teacher investment in treatment and teacher–clinician relationship quality were significantly and positively related to maternal satisfaction with treatment, as was referral source, such that mothers reported greater satisfaction with treatment when their child had been referred by their teacher/school. These findings indicate that higher-quality teacher intervention implementation, characterized by greater adherence to intervention components and higher-quality relationships, is related to enhanced child and parent treatment outcomes. At the same time, significant relationships were revealed between parental acculturation and teacher intervention implementation and child and parent/family treatment outcomes. These findings highlight the need for further research on the role of acculturation.

The findings of the current study have important clinical implications. As Latinx youth and families are less likely than their European American counterparts to access high-quality mental health services, including treatment for ADHD (Flores & The Committee on Pediatric Research, 2010; Morgan et al., 2014), it is of the utmost importance that clinicians and teachers know how to best serve these individuals. Evidence-based psychosocial interventions for ADHD can benefit Latinx youth and families across domains. Importantly, teacher

implementation of such an intervention impacts the extent of this benefit. Specifically, high-quality teacher intervention implementation, characterized by engagement in and adherence to intervention components and positive relationships among those involved in implementation, is related to optimized youth and family treatment outcomes. Parental acculturation also is related to teacher intervention implementation as well as child and family treatment outcomes. Schools, teachers, and clinicians must work together to facilitate the high-quality intervention implementation that optimizes outcomes.

Disclosure statement

The authors report no conflicts of interest.

Additional information

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Notes

1 Given the significant correlations that emerged among child age, treatment type, and percentage DRCs correctly completed, an analysis of covariance also was conducted to examine mean differences in percentage DRCs correctly completed by referral source while accounting for these covariates. As the pattern of findings remained the same, the results of the *t* test are reported above.

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