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Reducing the Risk of Internalizing Symptoms among High-risk Hispanic Youth through a Family Intervention: A Randomized Controlled Trial

T Perrino[1], **H Pantin**, **S Huang**, **A Brincks**, **CH Brown**, and **G Prado**

[1]Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL

Abstract

Familias Unidas is an intervention that has been found to be efficacious in preventing and reducing substance use, sexual risk, and problem behaviors among Hispanic youth. While it does not specifically target youth internalizing symptoms, the intervention works to strengthen parenting and family factors associated with reduced risk of internalizing symptoms (i.e., depression, anxiety symptoms). This study examines the effects of Familias Unidas on internalizing symptoms among high-risk youth, as well as the role of family-level factors in the intervention's effects. A total of 242, 12-17 year-old Hispanic youth with a history of delinquency and their primary caregivers were recruited from the school and juvenile justice systems, and randomly assigned to the Familias Unidas intervention or community practice control. A linear latent growth model was used to examine intervention effects on the trajectory of adolescent internalizing symptoms from baseline to 6- and 12-months post-baseline. Results show that the Familias Unidas intervention was more efficacious than control in reducing youth internalizing symptoms. Baseline youth externalizing and internalizing symptoms did not moderate the intervention's effects on the trajectory of youth internalizing symptoms. While parent-adolescent communication did not significantly moderate the intervention's effects, changes in parent-adolescent communication mediated the intervention's effects on internalizing symptoms, showing stronger intervention effects for youth starting with poorer communication. Findings indicate that the Familias Unidas intervention can reduce internalizing symptoms among high-risk Hispanic youth, and that improving parent-youth communication, a protective family factor, may be one of the mechanisms by which the intervention influences youth internalizing symptoms.

Keywords

adolescent; prevention; internalizing symptoms; depression; family; Hispanic

Elevated depressive and anxiety symptoms, or “internalizing symptoms”, are prevalent among adolescents and can cause significant impairments in functioning, even when symptoms do not reach diagnostic levels (Bertha & Baklasz, 2013; Pine, Cohen, Cohen & Brook, 1999; Rueter, Scaramella, Wallace, & Conger, 1999; Saluja et al., 2004; Wesselhoeft, Sorensen, Heiervang, & Bilenberg, 2013). During adolescence, high levels of

Corresponding author: tperrino@med.miami.edu.

depressive and internalizing symptoms also increase the probability of major depression and other mental health problems (Kessler, Zhao, Blazer & Swartz, 1997; Wesselhoeft, Sorensen, Heiervang & Bilenberg, 2013). Youth who exhibit externalizing problems, such as conduct disorder and delinquent behavior, are at high risk of also experiencing internalizing symptoms and disorders (Capaldi, 1992; Ingoldsby et al., 2006; Patterson, Reid & Dishion, 1992; Teplin, Abram, McClelland, Dulcan & Mericle, 2002; Wolffe & Ollendick, 2006). Selective prevention interventions that focus on *preventing* or *reducing the risk* of mental, emotional and behavioral problems among high-risk youth who do not yet have a disorder are important in reducing the burden of these problems (NRC/IOM, 2009). Indeed, delinquent behaviors and conduct problems often co-occur with depressive symptoms, and youth with co-occurring internalizing and externalizing symptoms show poorer behavioral and developmental outcomes than those with either of these types of symptoms alone (Capaldi & Stoolmiller, 1999; Wiesner, 2003; Wiesner & Kim, 2006; Youngstrom, Findling, & Calabrese, 2003).

Reducing the risk of internalizing symptoms is also important given the multiple barriers to quality mental health treatment services, especially for vulnerable populations such as racial and ethnic minority groups (Alegria, Vallas, & Pumariega, 2010). Interventions that reduce the risk of mental, emotional and behavioral problems during the key developmental period of adolescence also have0 the potential to reduce substantial human suffering and costs related to these health outcomes once these problems or disorders have already developed (see NRC/IOM, 2009). Meta-analyses show significant effects of prevention programs on youth mental health, substance use and conduct problems, and that these effects are sustained over time (Sandler et al., 2014).

There are several parent and family risk factors for youth depressive symptoms and depression, such as family conflict and poor communication; thus, family-based prevention interventions that prevent or reduce the risk of behavioral disorders before these occur can be valuable (see Restifo & Bogels, 2009; Sander & McCarty, 2005). These interventions aim to strengthen family protective factors, such as positive parenting behaviors and family functioning, and have demonstrated beneficial results on multiple youth outcomes, including substance use, sexual risk and internalizing symptoms (Connell & Dishion, 2008; NRC/IOM, 2009; Prado & Pantin, 2011; Trudeau, Spoth, Randal, Mason, & Shin, 2012). Positive parenting is particularly important for youth at risk for delinquency, as there is a strong link between several parent and family variables and youth delinquency, such as parental rejection and hostility (Hoeve, Dubas, Eichelsheim, van der Laan, Smeenk, & Gerris, 2009). Despite the efficacy of these interventions, it is important to examine whether family-based prevention programs are equally effective for all youth subgroups (i.e., *moderators* of intervention effects) and to investigate the mechanisms by which these interventions work (i.e., *mediators* of intervention effects). The information gained from these types of analyses can help practitioners properly direct programs to youth who will benefit from them, and they can help intervention developers improve the outcomes of their programs.

In terms of moderators of intervention effects, some studies have found that certain youth subgroups respond more positively to interventions for the prevention or reduction of internalizing symptoms, for example youth with: higher levels of depressive or internalizing

symptoms (Horowitz & Garber, 2006; Stice, Shaw, Bohon, Marti & Rohde, 2009) and poorer parent-child relationship quality (Tein, Sandler, MacKinnon, & Wolchik, 2004). Examining parenting and family factors as moderators and mediators of intervention effects is critical because adolescents whose families show poorer functioning and greater discord are at greater risk for internalizing symptoms (see Pilowsky, Wickramaratne, Nomura, & Weissman, 2002; Restifo & Bogels, 2009; Sander & McCarty, 2005), and may have more to gain from family-based interventions (Tein et al., 2004). Intervention mediator analyses can provide further information about these interventions, potentially identifying "active ingredients" of family-based interventions and the mechanisms by which interventions produce positive effects. When the intervention moderators analyzed are also modifiable risk factors, such as family factors, mediation analyses can provide insights into processes by which interventions work to prevent or reduce internalizing symptoms, as well as identify effective intervention components (Perrino et al., 2014; Sandler, Schoenfelder, Wolchik & MacKinnon, 2011; Tein et al., 2004). Research demonstrates the value of nurturing environments for promoting healthy adolescent behaviors, and that improving family relations is a key way to strengthen the family environment, one of the most proximal context influencing youth (see Biglan, Flay, Embry, & Sandler, 2012)

Familias Unidas is a family-focused preventive intervention that has been found to improve parenting and family functioning, as well as reduce youth substance use and sexual risk behaviors among Hispanic adolescents, including those with a history of delinquency (Prado & Pantin, 2011; Prado et al., 2012a; 2012b). Studies have found that interventions that improve parenting and family functioning can protect youth from elevated internalizing and depressive symptoms (Connell & Dishion, 2008; Trudeau, Spoth, Randal, Mason, & Shin, 2012). Familias Unidas is guided by Ecodevelopmental Theory which contends that adolescent behavioral problems are influenced by risk and protective factors in the adolescent's environmental contexts or systems that mutually influence each other across development (Szapocznik & Coatsworth, 1999). These contexts consist of a network of interconnected subsystems, including family, peer and school microsystems, as well as broader mesosystems made up of the interactions between important microsystems (e.g., parental monitoring of peer relations), exosystems which affect microsystems (e.g., parents' social support networks) and macrosysems or broader social factors (e.g., cultural values) (Prado & Pantin, 2011; Szapocznik & Coatsworth, 1999). The intervention works to strengthen protective factors in multiple systems, but focuses on the family microsystem because it is the most proximal to youth. Family-focused interventions are especially consonant with Hispanic values and may be especially appropriate for this group (Gonzales et al., 2012; Prado & Pantin, 2011). The Familias Unidas intervention was also designed to be responsive to the experiences of Hispanic families in the U.S., for example by addressing issues of acculturation, acculturative stressors, and separation from family and social support networks in one's country of origin (Prado & Pantin, 2011; Santisteban, Coatsworth, Briones, Kurtines & Szapocznik, 2012). Indeed, the importance of addressing both family systems and sociocultural processes as part of interventions for Hispanic groups has been found to be important in the literature (see Gonzales et al., 2012; Prado & Pantin, 2011; Valdez, Abegglen, & Hauser, 2013; Valdez, Padilla, Moore, & Magaña, 2013).

While this intervention was not designed to influence youth internalizing symptoms, it addresses family protective factors common to the development of both externalizing and internalizing youth problems such as strengthening parenting skills and family relations (DeVore & Ginsburg, 2005; Restifo & Bogels, 2009). Improving parent- adolescent communication is one of the hypothesized mechanisms by which this intervention is believed to work (Prado & Pantin, 2011). Investigating whether Familias Unidas can also prevent or reduce youth internalizing symptoms is important given the vulnerability that delinquent youth have for coexisting internalizing and externalizing problems (Teplin et al., 2002), and the benefits of having interventions that impact multiple youth outcomes by targeting common risk factors (Bailey, 2009; NRC/IOM, 2009). Moreover, conducting moderation and mediation analyses to understand whether this intervention works equally well for different youth and the mechanisms by which the intervention works can help improve and more specifically target the intervention, improving its reach and success.

Hypotheses

This paper examines the efficacy of the Familias Unidas intervention in reducing youth internalizing symptoms among Hispanic youth with a history of delinquency, as well as “for whom” (i.e., moderators) and “how” (i.e., mediators) the intervention works. In terms of main effects, we hypothesized that the Familias Unidas intervention would be more efficacious than the control condition in reducing youth internalizing symptoms (Hypothesis 1). For the moderators of intervention effects on internalizing symptoms, we hypothesized that neither gender nor age would moderate the effects of the intervention on youth internalizing symptoms (Hypothesis 2a). On the other hand, we hypothesized that baseline youth internalizing symptoms, baseline youth externalizing symptoms, and baseline parent-adolescent communication would be significant moderators of intervention's effects. Specifically, we expected that Familias Unidas would be more efficacious: for adolescents with higher levels of baseline internalizing symptoms (Hypothesis 2b), for youth with higher levels of externalizing symptoms (Hypothesis 2c), and for those with lower levels of parent-adolescent communication (Hypothesis 2d). In terms of mediators, we hypothesized that improvements in family communication would mediate the impact of the intervention on adolescent internalizing symptoms, but with a stronger effect for those adolescents with low baseline levels of family communication (Hypothesis 3).

Method

Participants

Study participants were Hispanic youth between the ages of 12 and 17 years old with a history of delinquency, and their primary caregivers. Youth were referred for study screening by the Miami-Dade County's Department of Juvenile Services and the Miami-Dade County Public School System (MDCPS). A history of delinquency was defined as having been arrested or as having committed at least one “Level III Behavior Problem”, which is described by MDCPS as assault/threat against a non-staff member, breaking and entering/burglary, fighting (serious), hazing, possession or use of alcohol and/or controlled substances, possession of simulated weapons, trespassing, and vandalism. To be eligible to participate in the study, youth had to: identify as Hispanic or Latino; be between the ages of

12–17 years; plan to reside in South Florida during the study period; and have been identified as having a history of delinquency. Research associates screened participants for eligibility by phone. Those meeting eligibility criteria were scheduled for an in-person meeting in the research office for a full explanation of the study, followed by informed consent and assent, and completion of the baseline assessment. This study was approved by the University of Miami's IRB.

As seen in Figure 1, which depicts the flow of study participants in a Consort Diagram, out of the 310 participants who met the study's eligibility criteria, 242 (78.1%) youth agreed to participate, along with their primary caregivers. Participants were 156 boys and 86 girls with a mean age of 14.7 years (SD = 1.38) and their primary caregivers. The median household income was $15,000–$19,999. Approximately 65% of adolescents were born in the U.S. Among U.S.born youth (n=158), 136 were second generation and 22 were third generation. Of foreign-born adolescents, 70% had been living in the U.S. 10 years or less. Immigrant adolescents (n = 84) and parents were from Cuba (25.0%), Honduras (15.5%), Nicaragua (9.5%), Puerto Rico (8.3%), and the Dominican Republic (7.1%). Twenty-three percent of adolescents reported speaking mostly English, 43% reported speaking mostly Spanish, and 35% reporting speaking both English and Spanish at home.

Study Design & Conditions

Following baseline assessment, participants were randomized into either the Familias Unidas intervention (n=120) or a community practice control condition (n=122), using concealment of allocation procedures to ensure that condition assignment was unknown before the participant was enrolled in the study. Assessments of both the parent and the child were conducted at baseline, after the intervention period ended, at 6-months, and then again at 12-months after randomization. Every effort was made to keep assessors blind to intervention status, including separation of assessor and intervention staff. Follow-up assessments at both 6 months (113/120 for Familias Unidas; 119/122 for control), and at 12 months (113/120 for Familias Unidas; 116/122 for control) were very high and did not differ by intervention condition (p=0.21 for 6 months, 0.63 for 12 months, see Figure 1).

Intervention

The Familias Unidas intervention is a family-based intervention designed to prevent substance use and high-risk sexual behavior among Hispanic youth (Prado and Pantin, 2011). Guided by Ecodevelopmental Theory and drawing from culturally specific models (Prado & Pantin, 2011), the intervention includes eight 2-hour multi-parent group sessions and four 1-hour family visits administered across 12 weeks. Familias Unidas sessions aim to place parents in the role of experts regarding their children's needs and development. The primary goal of the parent groups is to bring parents together to increase parental support and establish parental investment in their adolescents, and provide a context for parent participation in a conjoint skills learning process. The central goal of the family visits is to give parents an opportunity to transfer the competencies learned in the group sessions to their adolescent, foster more nurturing and supportive relationships, and increase parent–child communication, all in the context of the family. All intervention sessions are parent-centered, though adolescents participate in the family visits. In this study, Familias Unidas

was delivered by supervised research staff members who were experienced in delivering this intervention to parent groups as well as to families; hence, this is an efficacy study. A full description of the intervention may be found elsewhere (see Prado & Pantin, 2011).

Participants randomized to the community practice control condition were offered standard care services available to Miami-Dade County youth who have been involved in delinquent behavior, and their parents. These included referrals to community-based organizations offering therapy or interventions for different problem behaviors for example drug and alcohol use, and based on different modalities, such as individual and family therapy. These services address a variety of problem behaviors, including alcohol and drug use. Unfortunately, data regarding the type or amount of services that were actually received by youth or families in the control condition were not collected.

The average number of sessions attended by the Familias Unidas intervention group was 6.88 (SD = 4.05). Among those who attended at least one session (87%), the mean number of sessions was 7.9 (SD = 3.2). In terms of assessment follow-up, of the 120 families assigned to the intervention group, 113 completed the 6-month follow-up and 113 completed the 12-month follow-up. Of the 122 families assigned to the control group, 119 completed the 6-month follow-up and 116 completed the 12-month follow-up.

Measures

Assessments were completed at baseline, 6-months post-baseline and 12-months post-baseline using the Audio-CASI system (Resnick et al., 1997), an audio-enhanced, computer-assisted self-interviewing program, which the participant could choose to complete in English or Spanish. Participating families were compensated $60, $70, and $80 for completing the baseline, 6, and 12-months post baseline assessments, respectively. For the present analyses, parents completed all assessment measures.

Socio-demographic characteristics—Data collected included age, gender, country of birth, years in the U.S., and for youth only, their primary language spoken.

Adolescent internalizing symptoms—The outcome of internalizing symptoms was assessed at each time-point using the Anxiety-Withdrawal Subscale of the Revised Behavior Problem Checklist (Quay & Peterson, 1993). This is an 11-item subscale measuring adolescent internalizing symptoms as reported by parents, and includes both depressive and anxiety symptoms ($\alpha = 0.82$). Each item is rated on a 3 point Likert scale ranging from “0=No problem” to “2=Severe problem”. Sample items are: “Depressed; always sad,” “Generally fearful; anxious.” Possible scores ranged from 0-22 with higher scores indicating higher levels of internalizing symptoms. A square root transformation of internalizing symptoms was used for this outcome. Construct validity for the RBPC has been established, including discrimination between clinic-referred and community samples of youth (Quay & Peterson, 1993). Significant correlations between parent and youth reports of internalizing symptoms have also been shown, 0.58 for fathers and 0.67 for mothers (McCombs Thomas, Forehand, Armistead, Wierson, & Fauber, 1990). Reported norms for this scale indicate that mean (SD) scores for community youth are 4.47 (4.07) for females and 3.85 (3.66) for

males, while for clinical youth are 11.12 (4.77) for females and 9.71 (4.58) for males (Quay & Peterson, 1993).

Adolescent externalizing symptoms—This variable was measured using four subscales of the Revised Behavior Problem Checklist (Quay & Peterson, 1993): attention problems (16 items; α = 0.94), motor excess (5 items; α = 0.85), socialized aggression (17 items; α = 0.92) and conduct disorder (22 items; α = 0.95). Item examples are: "Distractible; easily diverted from the task at hand," "Hyperactive; always on the go;" "Fights;" "Steals from people outside the home." Higher scores indicate higher levels of externalizing problems. A latent variable composed of these four indicators was used as an index of externalizing problems. Standardized loadings were 0.88, 0.84, 0.76 and 0.96, for attention problems, motor excess, socialized aggression, and conduct disorder.

Parent-adolescent communication—This variable was measured using the Parent–Adolescent Communication Scale (Barnes & Olson, 1985). This 20-item parent-report measure assesses the quality of parent-adolescent communication (α = 0.88). Each item is rated on a 5-point Likert scale from "1=Strongly disagree" to "5=Strongly agree". Examples of items include: "When I ask questions, I get honest answers from my child;" "I find it easy to discuss problems with my child;" "I openly show affection to my child." Possible scores ranged from 20-100 with higher scores indicating better parent-adolescent communication.

Data Analytic Plan

The analyses used growth curve modeling, which is more powerful and versatile than repeated measures analysis of variance because it allows for missing data and uses all available data (Little & Rubin, 1987). To address each hypothesis, we first fit linear latent growth models (LGM) for the 3 repeated measures of adolescent internalizing symptoms. In modeling of this outcome, we examined departures from linearity and concluded that a linear growth model was appropriate, allowing a summary of intervention effects to be captured by changes in the slopes. Latent growth models are equivalent to mixed effects multilevel models where the first level fits each response in time to an individual-level growth model; the second level represents the participant. Thus, the measurement model for the first level, involving observed outcomes $Y_{t(i)}$ at time t_i for subject i,

$$Y_{t(i)}=a_i+b_iT_i+e_{t(i)}$$

where the individual level intercept a_i and slope b_i are random, with their own predictors and unique errors as given below. In this growth model framework, the regression of the latent slope b_i on intervention condition measures the difference in the mean internalizing trajectory for individuals in Familias Unidas condition compared to community practice control condition. As a check on random assignment and model adequacy, we also tested whether the intercepts differed by intervention condition; as expected there were no differences. Growth model covariates included age, gender, baseline parent-child communication, as well as the latent intercept for internalizing symptoms. The difference in adjusted slopes for intervention versus control is coded so that a positive value indicates a

larger reduction in symptoms in the Familias Unidas group compared to control, as we hypothesize. The effect size, d, was computed as the difference in the slope means for intervention and control group divided by the population standard deviation of the slope growth factor after adjusting for covariates (Muthén & Muthén, 2002; Raudenbush and Xiao-Feng, 2001).

To test the moderation Hypotheses 2a through 2d, we modeled baseline internalizing symptoms, baseline externalizing symptoms, and baseline parent-adolescent communication as moderators of the intervention's effect on youth internalizing symptoms. We tested gender, baseline internalizing symptoms, baseline externalizing symptoms, and baseline parent-adolescent communication as potential intervention moderators, using separate analyses for each by including condition, moderator, and condition by moderator interaction term in the regression of the latent slope b_i. Thus, moderator effects are assessed by the regression coefficient of the slope for the interaction term of baseline covariate by intervention status.

To test the moderated mediation Hypothesis 3, we modeled post-intervention parent-adolescent communication as a mediator of the relationship between condition and the trajectory of internalizing symptoms using the “product of coefficients method” (MacKinnon, 2008). We also looked at the standard mediation model with no interaction. All mediation tests were based on whether the confidence interval for the product of coefficients included zero. This approach addresses the known non-normality of the test statistic (MacKinnon, 2008). Baseline (pre-intervention) parent-adolescent communication was modeled as a moderator of the relationship between intervention and post-intervention parent-adolescent communication as well as the relationship between intervention and the internalizing trajectory, as has been done in other work (see Tein et al., 2004, and this paper's Figure 3 for an illustration). The extended Johnson-Neyman approach was used to assess where mediation occurred as a function of baseline levels (Preacher, Rucker, & Hayes, 2007). Missing data for the repeated measures were addressed using full information maximum likelihood. All growth curve analyses were conducted in Mplus version 7.0 (Muthén & Muthén, 2012).

Results

Descriptive Analyses

The mean age of participants was 14.7 years (SD=1.38). Approximately 36% of the sample was female with 65% of youth were born in the United States. At baseline, the mean level of internalizing symptoms on the RBPC scale was 5.68 (SD = 5.34). At the 12 month follow-up the mean level of depressive symptoms was 3.87 (SD = 4.85). This mean falls closer to norms for community youth (i.e., 4.47 for females, 3.85 for males) than clinical youth (11.12 for females, 9.71 for males) (Quay & Peterson, 1993).

Comparability of Conditions at Baseline

Analysis of variance and chi-square tests were used to examine differences in socio-demographic and internalizing symptoms at baseline by condition. As indicated in Table 1, no significant differences were found.

Intervention Main Effects Analyses

For Hypothesis 1, we predicted that the Familias Unidas interventions would be more efficacious than the control condition in reducing youth internalizing symptoms. Results show that internalizing symptoms decreased in both intervention and control groups over time, as illustrated in Figure 2. However, there was a significant effect of the intervention on internalizing symptoms. Specifically, the estimate of the intervention effect on the slope of internalizing symptoms was significant with a greater reduction in internalizing symptoms across time for youth in Familias Unidas compared to the control condition (b = 0.191, se = 0.077, p = 0.013, 95% CI: 0.041, 0.341). The effect size was 0.48.

Moderator Effects Analyses

As expected in Hypothesis 2a, analyses indicate that there was no significant moderation effect of gender (b=0.015, se=0.15, p=0.92, 95% CI: -0.280, 0.310) or age (b=-0.061, se=0.053, p=0.249, 95% CI: -0.165, 0.043) in predicting youth internalizing symptoms. That is, the Familias Unidas intervention was no more or less efficacious for youth of different ages or genders. In Hypothesis 2b, we predicted that baseline youth internalizing symptoms would be a significant moderator of the intervention's effects on the trajectory of youth internalizing symptoms, with Familias Unidas being more efficacious for adolescents with higher starting levels of baseline internalizing symptoms. However, results show that baseline internalizing symptoms did not significantly moderate intervention effects (b=0.002, se=0.069, p=0.973, 95% CI: -0.132, 0.137), and so this hypothesis was not supported. Similarly, Hypothesis 2c predicted that baseline externalizing symptoms would be a significant moderator of the intervention's effects on the trajectory of youth internalizing symptoms. However, this hypothesis was not supported either, with results showing that baseline externalizing symptoms did not significantly moderate the intervention's effects on the trajectory of internalizing symptoms (b = 0.001, se = 0.007, p = 0.886, 95% CI: -0.012, 0.014). Finally, Hypothesis 2d was not supported, as baseline parent-adolescent communication was not found to be a significant moderator of the intervention's effect on internalizing symptoms (b = 0.006, se = 0.006, p = 0.348, 95% CI: -0.007, 0.018). In other words, youth having poorer initial levels of family communication did not benefit more or less from the Familias Unidas intervention as far as reductions in internalizing symptoms when compared to youth with better initial family communication levels.

Moderated Mediation Analysis

Parent-adolescent communication is a key mechanism by which the Familias Unidas intervention is believed to prevent or reduce adolescent problems. Hypothesis 3 predicted that improvements in family communication would mediate the impact of the intervention on adolescent internalizing symptoms, but with a stronger effect for those adolescents with low baseline levels of family communication. We first tested whether there was a significant

overall mediating effect of parent communication regardless of baseline communication level, and found no overall mediation effect (indirect effect: b = 0.027, se = 0.017, p = 0.108, 95% CI: -0.006, 0.060). To test this moderated mediation hypothesis, a baseline parent-adolescent communication by intervention interaction term was included as a predictor of both the hypothesized mediator (post-intervention parent-adolescent communication) and the outcome (trajectory of internalizing symptoms). Figure 3 illustrates the mediation model with baseline communication as a moderator. While parent- adolescent communication was not a significant moderator of intervention effects as highlighted in Hypothesis 2d's analyses, there was a significant moderated mediation effect. Specifically, baseline parent-adolescent communication significantly moderated the intervention effect on post-intervention parent-adolescent communication (b = 0.353, se = 0.102, 95% CI: 0.154, 0.553, p = 0.001), indicating greater improvement in parent-adolescent communication for Familias Unidas compared to control for those who had poorer communication at baseline. We also found post-intervention parent-adolescent communication was significantly related to the slope of the internalizing symptoms trajectory (b = -0.014, se = 0.004, 95% CI: -0.021, -0.006, p = 0.001), indicating greater reduction in symptoms with greater improvement in communication. This indicates that there were stronger mediating effects for youth with lower baseline levels of parent-adolescent communication when compared to those with higher communication levels. Using the extended Johnson-Neyman approach presented by Preacher, Rucker, and Hayes (2007), we found the indirect effect was not significant for values of baseline family communication above 30.

Post-hoc Analyses

Additional analyses show that for intervention participants, the mean level of internalizing symptoms decreased from 6.27 (SD=5.58) to 3.59 (SD=4.66), with an effect size using Cohen's d of 0.51, which represents a medium effect (Cohen, 2013). In comparison, for control participants, the mean level of internalizing symptoms decreased from 5.11 (SD = 5.04) to 4.15 (SD = 5.04), with an effect size using Cohen's d of 0.18, which is a small effect (Cohen, 2013).

Discussion

The objective of this study was to examine whether the Familias Unidas intervention was efficacious in reducing internalizing symptoms among Hispanic youth with a history of delinquency, as well as to determine possible moderators and mediators of the intervention's effects, in particular family factors. Elevated internalizing symptoms during adolescence can create significant distress and increase the probability of internalizing disorders and other mental health problems (Bertha & Baklasz, 2013; Rueter, Scaramella, Wallace, & Conger, 1999; Wesselhoeft, Sorensen, Heiervang & Bilenberg, 2013). The main effects analyses indicate that while internalizing symptoms in both intervention and control groups decreased across time, the Familias Unidas intervention was more efficacious than the community control condition in reducing youth internalizing symptoms. This is noteworthy because reducing internalizing symptoms was not an intended goal of the intervention, making this is an added bonus or perquisite of the intervention, which has been found in previous work to

reduce youth drug use, sexual risk behavior and behavior problems (Prado et al., 2012a; 2012b).

The Familias Unidas intervention with delinquent youth can be considered to be a *selective* prevention intervention as far as preventing elevated internalizing symptoms and problems (NRC/IOM, 2009). Indeed, at baseline, this sample's mean level of internalizing symptoms fell close to community sample means rather than clinical sample means. Yet, because delinquent youth are at elevated risk of internalizing symptoms and disorders (Teplin et al., 2002; Wiesner, 2003; Wiesner & Kim, 2006), maintaining low levels of internalizing symptoms and preventing the escalation of internalizing symptoms is an important outcome for these youth. Preventive interventions that reduce depressive and internalizing symptom levels across extended periods of time or that prevent the onset of internalizing disorders can reduce the burden of mental, emotional and behavioral disorders (see Gillham et al., 2007; NRC/IOM, 2009).

The greater reductions in internalizing symptoms for Familias Unidas participants compared to control are consequential. Indeed, the post-hoc analyses show that for intervention participants the reduction in internalizing symptoms represented a medium effect size while for control participants the internalizing symptoms reduction was a small effect size. These results, together with findings from previous studies demonstrating the beneficial effects of Familias Unidas on other youth outcomes such as drug use, sexual risk behavior and behavior problems, indicate that this family-centered intervention has a broad impact on health-risking behaviors during adolescence (Prado et al., 2012a; 2012b). They support recommendations calling for behavioral health promotion interventions that impact multiple youth health outcomes by targeting common risk and protective factors (Bailey, 2009; NRC/IOM, 2009), especially when funding and time are limited resources. This is especially relevant for clinicians working with youth who have a history of delinquency, given that mental, emotional and behavioral problems often co-occur and that youth who develop both externalizing and internalizing problems have poorer outcomes than those with either of these types of symptoms alone (Capaldi & Stoolmiller, 1999; Wolffe & Ollendick, 2006; Youngstrom, Findling, & Calabrese, 2003).

There have been other interventions focusing on the prevention of youth externalizing problems, such as substance use and conduct problems, that have also documented effects on youth internalizing symptoms without specifically targeting internalizing symptoms (see Connell & Dishion, 2008; Trudeau, et al., 2012). However, unlike Familias Unidas, these interventions do not target Hispanic youth or youth with a history of delinquency, who are vulnerable to co-occurring externalizing and internalizing problems (Wiesner, 2003; Wiesner & Kim, 2006). Familias Unidas is designed to be consonant with Hispanic values not only by focusing on strengthening families, but also by being responsive to the experiences of Hispanic families in the U.S., in particular those that can intensify adolescent risk for behavioral problems, including differential acculturation, acculturative stressors, and separation from family and social support (Prado & Pantin, 2011).

The present study's analyses also examined whether different subgroups of delinquent youth responded differently to the intervention. Prior prevention intervention research shows that

there is variability in response to preventive interventions (Stice et al., 2009; Sandler et al., 2014). In the present study, age and gender did not moderate the effects of the intervention on internalizing symptoms. That is, the intervention was no more or less effective for girls than boys, or for younger than older youth, which can be seen as a positive finding. Moderator analyses did not find that youth with higher levels of internalizing symptoms responded better or worse to the intervention as far as reduced internalizing symptoms, a finding that differs from previous analyses that have concluded that youth with greater internalizing and depressive symptoms may benefit more from preventive interventions (Horowitz & Garber, 2006; Stice et al., 2009). This may be because the youth in this trial were not selected specifically because they had elevated levels of internalizing symptoms. Indeed, as noted in the results section, the mean level of baseline internalizing symptoms in this sample falls closer to levels found in community samples rather than clinical samples. Similarly, the moderator analyses did not show that youth with higher levels of externalizing problems benefited more or less from the intervention in terms of fewer internalizing symptoms, suggesting that the intervention is equally efficacious for delinquent youth with different levels of externalizing problem behaviors. This particular's study's sample was selected because youth had already engaged in delinquent behavior, and therefore the range on externalizing symptoms may be higher and more restricted than in the general population.

To assess the influence of family-level variables on the intervention's effects, analyses examined parent-adolescent communication as a potential moderator and mediator of intervention effects. Youth exhibiting conduct problems and delinquent behavior are more likely to experience poor family functioning and worse interpersonal relationships with their parents (Hoeve et al., 2009), indicating that a family-focused preventive intervention may be especially fitting for these youth's needs. This study's analyses help provide information about the possible active ingredients of this intervention, and the importance of influencing family-level risk and protective factors as part of these interventions. While baseline levels of parent-adolescent communication did not moderate the intervention's effects on internalizing symptoms, the moderated mediation analyses show that the effects of the Familias Unidas intervention on internalizing symptoms were mediated by improvements in parent-adolescent communication among those adolescents with lower initial levels of parent-adolescent communication. Indeed, positive parenting and family communication are common protective factors related to the development of both externalizing and internalizing symptoms (NRC/IOM, 2009), and a primary target of the Familias Unidas intervention. These findings are clinically important, as they suggest that improving the quality of family communication may be one of the “active ingredients” of this intervention in the reduction of internalizing symptoms, and that strengthening family communication should remain a central target of the intervention. Indeed, several research studies have confirmed the importance of nurturing environments for youth health outcomes, and in particular the importance of a supportive family context (see Biglan, at al., 2012; Restifo & Bogels, 2009) and positive family communication (Zhou, Sandler, Millsap, Wolchik, & Dawson-McClure, 2008).

The Familias Unidas intervention uses several intervention techniques to strengthen parent-adolescent communication. Through a participatory process in which parents are placed in

the position of experts on their children and their needs, parents acquire active listening skills, practice providing support and guidance, as well as engage in regular discussions with their children. Parents are given opportunities to role-play these skills during the parent group meetings and subsequently practice these skills during discussions about real-life issues with their adolescents during the home-based family meetings. Parents receive feedback and support from the facilitators during these family meetings.

This study is not without limitations. First, the study's internalizing symptoms outcome variable was assessed using the Revised Problem Behavior Checklist or RBPC (Quay & Peterson, 1993), which utilizes parent reports of youth symptoms. Because reducing internalizing symptoms was not a specific objective of this intervention, internalizing symptoms were not assessed as comprehensively as the externalizing, drug use and sexual risk outcomes. Parent reports of youth symptoms have sometimes been criticized because they can differ from youth self-reports and having youth reports of their internalizing symptoms would have added strength to the findings. However, it is noteworthy that previous research has found parent reports and youth self-reports about internalizing symptoms using the RBPC are strongly correlated (McCombs et al., 1990). A second study limitation is that the generalizability of these findings to other groups of youth beyond Hispanics with a history of delinquency is unknown. Third, the study did not gather specific data about what community services or interventions were actually received by participants in the community practice control condition. Thus, while analyses show that the intervention was more effective than community control, future studies should directly assess the services received by the control group to allow specific conclusions about the comparative efficacy of Familias Unidas. Finally, there are other possible, unexplored mechanisms by which this intervention may work to reduce internalizing symptoms among youth beyond improvements in parent-adolescent communication, and it would be informative to investigate these in future research.

In spite of these limitations, this study's results have potentially important implications for interventions for high-risk Hispanic youth who have been involved in delinquent behavior. First, when this study's findings are combined with previous findings from the Familias Unidas intervention, this intervention is efficacious in reducing a range of internalizing and externalizing symptoms among Hispanic, high-risk adolescents who have a history of delinquent behavior (Prado et al., 2012a; 2012b). It is important that clinicians have access to evidence-based interventions such as Familias Unidas that are efficient in their impact on multiple behavioral outcomes and that are culturally consonant in addressing the experiences of U.S. Hispanic groups[1]. Second, poor parent-adolescent communication is a modifiable risk factor that can be improved through the Familias Unidas intervention, leading to healthier youth outcomes, including improvements in internalizing symptoms. This supports the importance of targeting family-level risk and protective factors as a means of protecting adolescents from poor behavioral outcomes (DeVore & Ginsburg, 2005; Restifo & Bogels, 2009). The study also adds to our understanding of the processes by which parent and

[1]Additional information about the Familias Unidas intervention, including implementation information is available at the Substance Abuse and Mental Health Services Administration's National Registry of Evidence-based Programs and Practices website (NREPP: http://www.nrepp.samhsa.gov/) and Blueprints for Healthy Youth Development website (http://www.colorado.edu/cspv/blueprints/).

family-based preventive interventions may operate, something that is not always explored in intervention studies, and yet can help identify effective intervention components and better target interventions to youth in need (Sandler et al., 2011). Finally, this study highlights the advantages of targeting common family risk factors for multiple youth problem behaviors, which can be done more efficiently through a single intervention than multiple interventions.

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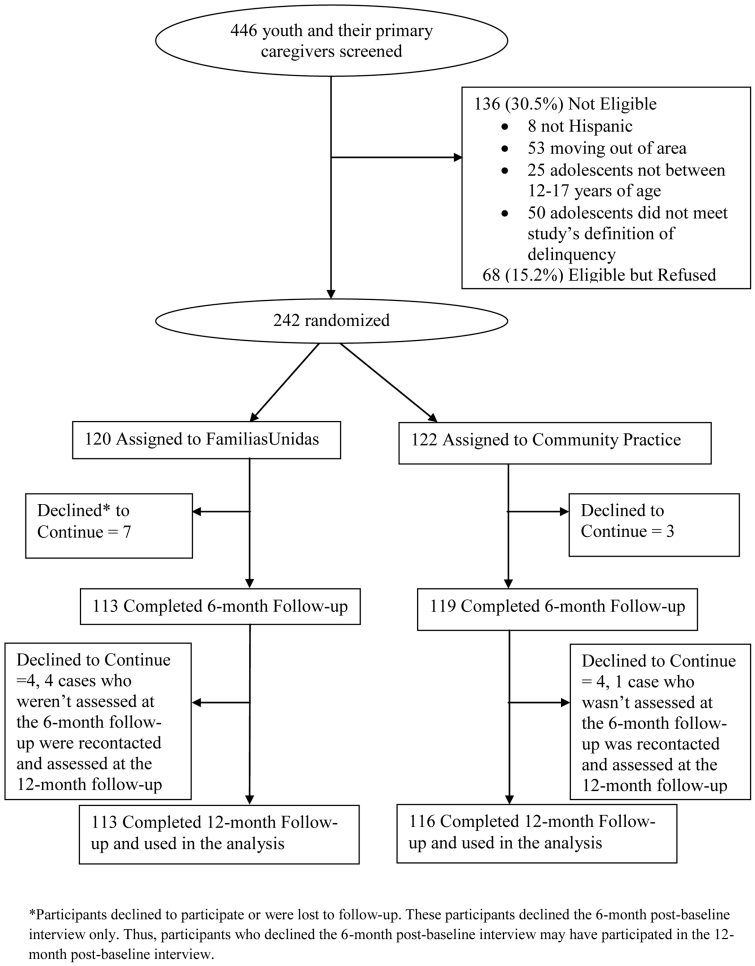

Figure 1.

Flow of study participants. *Participants declined to participate or were lost to follow-up. These participants declined the 6-month post-baseline interview only. Thus, participants who declined the 6-month post-baseline interview may have participated in the 12- month post-baseline interview.

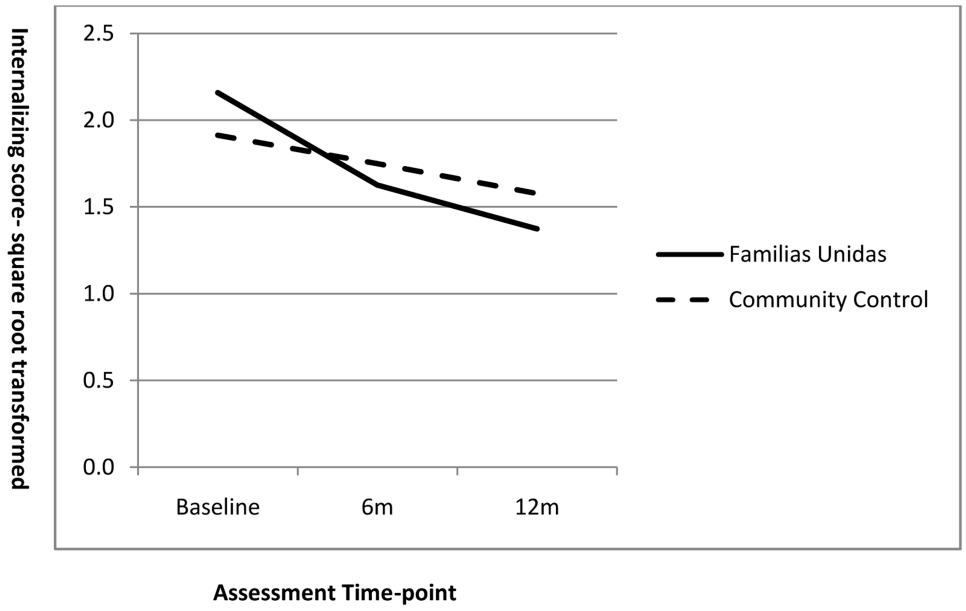

Figure 2.

Intervention symptoms main effects analyses showing that the Familias Unidas intervention was more efficacious in reducing adolescent internalizing symptoms than the control group.

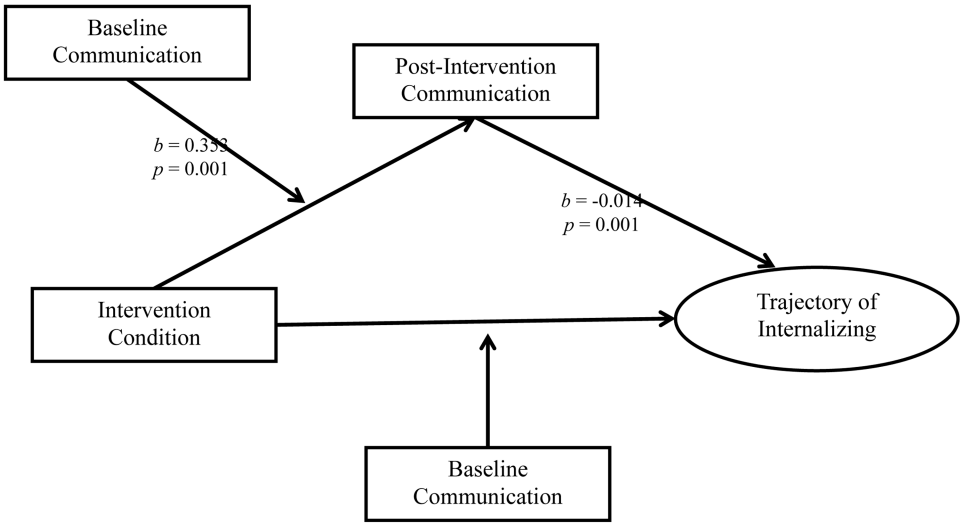

Figure 3.

Mediation Model with Baseline Communication as a Moderator. While parent- adolescent communication was not a significant moderator of intervention effects, there was a significant moderated mediation effect in which Familias Unidas was efficacious in improving internalizing symptoms through its impact on improving parent-adolescent communication, among youth who started with poorer communication.

Table 1

Baseline comparisons by condition on socio-demographics, moderators, mediator, and outcome

Variable	Condition			
	Familias Unidas (n=120)		Community Practice Control (n=122)	
	N (%)	Mean (SD)	N (%)	Mean (SD)
Gender	Male=80 (66.7) Female=40 (33.3)		Male=76 (62.3) Female=46 (37.7)	
Mean age (SD)		14.8 (1.36)		14.6 (1.41)
Family Income				
$0-$9,999	30 (25.0)		41 (33.6)	
$10,000-$19,999	38 (31.7)		35 (28.7)	
$20,000-$29,999	26 (21.7)		22 (18.0)	
> $30,000	26 (21.7)		24 (19.7)	
Internalizing Symptoms		6.27 (5.58)		5.11 (5.04)
Family Communication		69.33 (10.83)		70.23 (12.0)