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Parental warmth and psychiatric disorders among Puerto Rican children in two different socio-cultural contexts

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Abstract

Background—Parental warmth (PW) has a strong influence on child development and may precede the onset of psychiatric disorders in children. PW is interconnected with other family processes (e.g., coercive discipline) that may also influence the development of psychiatric disorders in children. We prospectively examined the association between PW and child psychiatric disorders (anxiety, major depression disorder, ADHD, disruptive behavior disorders) over the course of three years among Puerto Rican youth, above and beyond the influence of other family factors.

Methods—Boricua Youth Study participants, Puerto Rican children 5 to 13 years of age at Wave 1 living in the South Bronx (New York) (SB) and San Juan and Caguas (PR) (n = 2,491), were followed for three consecutive years. Youth psychiatric disorders were measured by the Diagnostic Interview Schedule for Children-IV (DISC-IV). Generalized Linear Mixed models tested the association between PW (Wave 1) and psychiatric disorders in the next two years adjusting for demographic characteristics and family processes.

Results—Higher levels of PW were related to lower odds of child anxiety and major depressive disorder over time (OR = 0.69[0.60; 0.79]; 0.49[0.41; 0.58], respectively). The strength of the association between PW and ADHD and disruptive behavior disorder declined over time, although it was still significant in the last assessment (OR = 0.44[0.37; 0.52]; 0.46[0.39; 0.54], respectively). PW had a unique influence on psychiatric disorders beyond the influence of other

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Conflict of interest

The authors declare that they have no conflict of interest.

Contributors

O. Santesteban-Echarri, the principal author, was responsible for the undertaking of preliminary analyses, interpretation of the results and writing up the first draft of the manuscript. R. Eisenberg contributed to further statistical analyses and writing/editing. Drs. M. Ramos-Olazagasti and C. Wei provided conceptual guidance on the study and contributed to the interpretation of the results. Drs. H. Bird and G. Canino contributed to the grant application, conduct of the study and where consulted when needed. Dr. C. Duarte contributed to the grant application, conduct of the study, supervision and edits on the early and final draft. All authors materially participated in the research and/or article preparation, and all authors have approved the final manuscript.

parenting and family processes. Stronger associations were observed among girls for depression and ADHD.

Conclusions—Incorporating PW behaviors such as acceptance, support, and comforting into interventions focused on parenting skills may help prevent child psychiatric disorders.

Keywords

Parental warmth; Anxiety; Major depression disorder; ADHD; Disruptive behavior disorder

1. Introduction

Considering the large and growing number of Latino families in the U.S. and the high risk for psychopathology present in the acculturation Latino subgroup (i.e., Puerto Rican individuals (Alegria et al., 2007)), it is important to understand risk and protective factors relevant for these families. For individuals from an ethnic group, such as Latino youth, whose culture is characterized by a strong family orientation, parenting practices may exert a central influence on the development of psychopathology. There is initial evidence supporting the importance of parenting (i.e., positive involvement, problem solving, effective discipline, monitoring and skill building) for Puerto Rican children (e.g., Domenech et al., 2013). However, prior studies have been limited by cross-sectional design, focus on symptoms (rather than clinically meaningful disorders) and fail to identify the specific effect of the association between key parenting practices and child psychopathology.

Parental warmth (PW) - a child-rearing practice that includes acceptance, affection, nurturance, support, love, and enthusiasm for children's endeavors and accomplishments - is a critical parenting behavior influencing child development (Khaleque and Rohner, 2002). Low parental warmth has been associated with youth psychopathology, such as anxiety symptoms and disorders (McLeod et al., 2007a,b), depressive symptoms and depression (McLeod et al., 2007a,b), and externalizing behaviors (Buschgens et al., 2010). While specific parenting behaviors seem to be more closely linked to specific types of problems - such as parental hostility and child depression (McLeod et al., 2007a,b), or parental monitoring and child behavioral problems (Fletcher, et al., 2004) - it is unclear whether PW is linked to a specific or wide range of conditions (see McKee et al., 2008). It is possible that PW is relevant for different types of conditions. The majority of research has indicated that PW is inversely associated with both youth depression (Cumsille et al., 2015) and anxiety (Wood et al., 2003), with indications that associations are stronger for depression than anxiety (McLeod et al., 2007a,b) however, the literature has also demonstrated the significance of PW for externalizing behaviors in youth such as ADHD and conduct problems (Deault, 2010). Nevertheless, few studies have examined externalizing and internalizing disorders together; those that did, found inconsistent results regarding whether or not there is differentiation in the associations of PW with internalizing versus externalizing disorders (Caron et al., 2006; McKee et al., 2008).

One particular challenge in examining parenting practices, such as PW, is that parenting behaviors correlate with one another and are often confounded with other parent and family factors as well, making it difficult to establish their unique effects on children's outcomes.

For example, PW is positively correlated with parental monitoring (Fletcher et al., 2004) and social support (Mason et al., 1994) and inversely related to coercive discipline (Lansford et al., 2014). It is also possible that PW simply reflects positive parental mental health and good family functioning, both of which are expected to be inversely associated with children's psychiatric disorders. Specifically, the presence of parental psychological problems may explain parents' difficulties showing nurturance and acceptance toward their children (Horn et al., 2004). Finally, among Latino families, PW and acceptance should be considered in the context of familism, a central cultural value that reflects a strong family orientation and sense of responsibility toward family (Lugo-Steidel and Contreras, 2003) that is inversely related to conduct problems in children (Morcillo et al., 2011). Therefore, it is critical to take into account other potentially relevant family and parental factors that might contribute to youth psychopathology when considering the influence of PW.

The association between PW and youth psychopathology has been established across various countries and for several ethnic groups, including those of Latino background (Khaleque and Rohner, 2011). However, there is some evidence showing that the positive influence of PW might vary within specific groups depending on the sociocultural context, e.g., an ethnic/racial group living in their country of origin vs. as a minority in another country/cultural context. In a study conducted by Varela et al. (2009) with Latin American children living in the US and Mexican children living in Mexico, anxiety symptoms experienced by Latin-American children living in the US were, contrary to what is usually observed, positively related to maternal acceptance, while the protective effect of maternal acceptance was observed among Mexican children living in Mexico (Varela et al., 2009). Such variations may result from the relative impact of PW on children's behaviors in relation to other risks and protective factors that may be present in different contexts (McLeod et al., 2007a,b). The protective effect of PW might be attenuated in contexts where several types of risk factors are present, including ones specific to social status (e.g., discrimination, acculturation, stress). Recognizing how sociocultural context can modify the relationship between PW and psychiatric disorders would allow us to better tailor our interventions to children living in specific contexts.

Other potential moderators of the association between PW and youth psychiatric disorders have also been identified, though with mixed results. While some studies suggest that females are more sensitive and vulnerable to interpersonal interactions than males (Hankin and Abramson, 2001), others have found no gender differences in relation to PW specifically (e.g., McHale et al., 2005). Furthermore, the impact of parenting practices may vary depending on their child's age. Younger children may be more negatively affected by the absence of parental warmth and emotional acceptance, while older children, in their search for independence, may form meaningful relationships apart from their parents, reducing the harmful effects of low parental warmth. Therefore the strength of the association between PW and psychiatric outcomes may differ by age group.

To bridge the research gap and increase understanding about the relationship between PW and youth psychopathology, the current study examined the longitudinal association between PW and specific psychiatric disorders (i.e., anxiety, major depressive disorder (MDD), ADHD, and disruptive behavior disorder (DBD)) among Puerto Rican children living in two

sociocultural contexts. A prior cross-sectional analysis of our sample reported that higher levels of PW were protective against DBD (Bird et al., 2007). Here, we expand to other important psychiatric disorders and examine this relationship longitudinally. We hypothesized that among PR families: (1) PW would be associated with lower odds of youth psychiatric disorders over time; (2) PW would be related to youth psychiatric disorders independently of other parent and family factors (parental coercive discipline, parental monitoring, parental psychopathology, familism, and social support), and (3) there would be differences in the association between PW and different youth psychiatric disorders across sociocultural contexts (study site), child gender and age.

2. Methods

2.1. Participants

Study procedures and measures are detailed elsewhere (Bird et al., 2006). In brief, the Boricua Youth Study is a representative probability sample of 2,491 Puerto Rican children in two sites: the South Bronx (SB) ($n = 1138$) in New York and in the standard metropolitan areas of San Juan and Caguas, (PR) ($n = 1,353$). Children (age 5 to 13, Wave 1) were followed over three waves of data assessment one year apart (2000–2004). Inclusion criteria were: at least one caretaker self-identified as being of Puerto Rican background and the presence of a child between the ages of 5–13. A maximum of three randomly selected children were selected per household. The retention rate after three waves was over 85%. The investigation was carried out in accordance with the latest version of the Declaration of Helsinki. The study was approved by the Institutional Review Boards at the New York State Psychiatric Institute and the University of Puerto Rico Medical Sciences Campus. All participants provided informed consent to participate in the study and assent forms for younger children. Participants were interviewed in Spanish or English; all of the respondents in PR chose Spanish. In the SB, 75% of the caregivers and 97% of the children chose English.

2.2. Measures

Demographics included: sociocultural context (site), child gender, child age (children from 5 to 9 vs. 10 to 13 years old), poverty (below/above Federal Poverty Level), maternal age, maternal education (less than high school, high school and college/above) and marital status (single vs. 2-parent family).

Parental Warmth—Measured through parental responses to 13 items from an abbreviated version of the *Hudson's Index of Parental Attitude's* (Hudson, 1982) at Wave 1. Response options were in a 4-point Likert scale (range, “Not at All/Never” to “A Lot/Very Often”). The measure reflects the overall quality of the caretaker's attitude toward the child and contains items about trust (e.g., “How much can you really trust him/her?”), closeness (e.g., “How much do you enjoy being with him/her?”), understanding (e.g., “To what extent does he/she understand you?”), and feelings between the caretaker and the child (e.g., “How often do you feel very angry towards him/her?”). Items were summed and coded such that higher values indicate higher PW ($\alpha = 0.81$), similar to studies with primarily a Black population ($\alpha = 0.82$) (Krohn et al., 1992). Eighty-nine percent of respondents were biological mothers;

the remainder were grandmothers (4.5%), adoptive or step mothers (2.8%), and biological fathers (1.8%). Others (1.9%) were adult siblings, aunts, or foster mothers.

Parental Coercive Discipline—Coercive discipline was assessed through parental reports of ignoring, acting cold, yelling or swearing at the child, physically and verbally abusing the child, and withholding affection (6 items, $\alpha = 0.54$) (Goodman et al., 1998). Higher scores represented the parent's greater use of coercive disciplinary practices.

Parental Monitoring—Measured through parental responses to a 4-point Likert scale with 9 items that assessed parental control over the child's daily activities, such as playing video games, watching television, or other activities inside/outside the household, and parent awareness of the location of their children (Patterson and Stouthamer-Loeber, 1984) ($\alpha = 0.58$).

Overall Parental Psychopathology—The parent responded to the *Family History Screen for Epidemiologic Studies* (FHE) (Lish et al., 1995), a 17-item measure that has been used to screen for lifetime parental emotional problems (depression and suicide attempts), substance use and antisocial behaviors. ($kappa = 0.56$ for test-retest reliability of self-reports (Weissman et al., 2000)).

Familism—Assessed through parental responses to an abbreviated adapted version of the *Sabogal Familism Scale* (Sabogal et al., 1987). It is a 4-point Likert scale with 10 items. It assesses values and attitudes related to familial obligations, support from family and family as referents. ($\alpha = 0.77$).

Social Support—Parental responses about the availability and satisfaction of the social support they received (Thoits, 1995). It assesses whether a person received help from their spouse or partner, relatives, friends and neighbors. (15 items, $\alpha = 0.67$).

Child Psychiatric Disorders—The *Diagnostic Interview Schedule for Children-IV* (DISC-IV) (Shaffer et al., 2000) and its Spanish version (Bravo et al., 2001) were used to assess children's anxiety, MDD, ADHD and DBD at each wave. Young children did not provide information about the disorders; thus, only parent report was used for this analysis in order to obtain information for the entire age spectrum.

2.3. Statistical analysis

We tested the correlation of PW with other family processes to determine the degree to which these characteristics were related to each other. Child psychiatric disorders were estimated over the three waves as a function of PW at Wave 1 in order to examine the prospective association between PW and anxiety, MDD, ADHD and DBD. Generalized linear mixed model analyses were conducted in SAS according to the GLIMMIX procedure with a logistic link, a random intercept for each family, and a nested random intercept for each subject. The PROC GLIMMIX is a SAS procedure that can perform longitudinal logistic regression, taking into account the clustering of three time points within subjects, and subjects within families. To examine whether the influence of PW on the outcome changed over time, we tested for interactions between PW and wave. We treated wave as

categorical in order to estimate odds ratios quantifying the association between Wave 1 PW and the disorders at each wave separately. If the PW*wave interaction was not significant, it was subsequently removed from the model. The first model of each outcome included only PW and wave as predictors, and their interaction when significant. These models were then adjusted for potential confounders or moderators (site, age group, gender, poverty, maternal age, maternal education, single-parent family, parental coercive discipline, parental monitoring, parental psychopathology, familism and social support) at Wave 1 (Table 3). Odds ratios obtained from the models estimated the association of a one-standard deviation increase in PW and the presence of the respective outcome at each wave. Two-way interactions between PW and (i) site, (ii) gender and (iii) age group (or three-way interactions between PW*wave and (i) site, (ii) gender, and (iii) age group) were tested for each outcome in the adjusted models.

All analyses were conducted in SAS 9.3. All descriptive statistics took into account the sampling weights, strata and clustering within primary sampling units using the SAS survey procedures. Longitudinal models were weighted with the sampling weights and included random effects to control for repeated measures.

3. Results

3.1. Descriptives

Table 1 presents descriptive statistics for all study variables. In general, the prevalence of all psychiatric disorders decreased over the 3 study waves (with the exception of MDD, which increased by 0.14% from W2 to W3). On average, PW was high in this sample ($M = 2.47$, range 0–3).

Table 2 shows Pearson correlations among family processes. There were significant correlations between most variables; however, the magnitude of the correlations was small to moderate.

3.2. Parental warmth and child psychiatric disorders

We tested the association between PW at Wave 1 and psychiatric disorders (anxiety, MDD, ADHD and DBD) over 3 waves, adjusted only for wave. PW reduced the odds of having anxiety (AOR[CI] = 0.71[0.63–0.79]) and MDD (AOR[CI] = 0.45[0.38–0.53]) across the three waves. These associations did not vary significantly over time (Type III $p = 0.05$ for anxiety and $p = 0.06$ for MDD, interactions removed from the models), and remained significant after adjusting for demographics (site, age group, gender, SES, maternal age, maternal education and single-parent family) and family processes (parental coercive discipline, parental monitoring, parental psychopathology, familism and social support) as shown in Table 3 (anxiety: (AOR[CI] = 0.69[0.60–0.79]), MDD: (AOR [CI] = 0.49[0.41–0.58])). To ease the interpretation of findings, we calculated the reciprocal of the AOR; a 1-SD decrease in Wave 1 PW was associated with 1.45 and 2.04 times greater odds of having anxiety and MDD, respectively.

The associations between PW and ADHD and DBD varied over time (Type III $p = 0.03$ and $p < 0.0001$ respectively for the PW*wave interaction term). For both ADHD and DBD, the

association between PW and the disorder decreased across waves. For ADHD: W1 (AOR[CI] = 0.38[0.33–0.43]), W2 (AOR[CI] = 0.43[0.38–0.50]), and W3 (AOR[CI] = 0.47[0.41–0.55]); For DBD: W1 (AOR[CI] = 0.26 [0.22–0.30]), W2 (AOR[CI] = 0.34[0.30–0.40]), and W3 (AOR [CI] = 0.44[0.38–0.51]). These results remained similar after adjusting for demographics and family processes (Table 3). For ADHD: W1 (AOR[CI] = 0.36[0.31–0.42]), W2 (AOR[CI] = 0.41 [0.35–0.48]), and W3 (AOR[CI] = 0.44[0.37–0.52]). For DBD: W1 (AOR[CI] = 0.28[0.24–0.34]), W2 (AOR[CI] = 0.36[0.30–0.43]), and W3 (AOR[CI] = 0.46[0.39–0.54]). That is, a one SD decrease in Wave 1 PW was associated with 2.78, 2.44, and 2.27 times greater odds of having ADHD at Waves 1, 2, and 3, respectively. A one SD decrease in PW was associated with 3.57, 2.78 and 2.17 times greater odds of having DBD at Waves 1, 2, and 3 respectively. The PW*time interactions for ADHD and DBD are depicted for descriptive purposes in Fig. 1, using PW values at the mean and 1-SD above and below the mean as prototypical values.

3.3. Variations by gender, site, and age

We next tested two-way interactions between PW and (i) site, (ii) gender, and (iii) age group in the adjusted models of anxiety and MDD, and three-way interactions between PW*wave and (i) site, (ii) gender, and (iii) age group in the adjusted models of ADHD and DBD (Table 4). Age was treated as a categorical variable as we were interested in testing for possible differences between childhood and adolescence. We found that the association between PW and MDD varied by site. Averaging across waves, the odds ratio for a 1-SD increase in PW and MDD were 0.31 (95% CI: 0.20–0.48) for Puerto Rico and 0.52 (95% CI: 0.43–0.63) for the Bronx (Type III $p = 0.0271$ for the PW*site interaction). The effects of PW on reduced odds of MDD were therefore stronger in Puerto Rico than in the Bronx. No significant site interactions were found for anxiety, ADHD, or DBD (available upon request).

The association between PW and MDD varied by gender. Averaging across waves, the odds ratio for a 1-SD increase in PW and MDD were 0.59 (95% CI: 0.47–0.75) for males and 0.38 (95% CI: 0.29–0.50) for females (Type III $p = 0.0090$ for the PW*gender interaction). The effects of PW on reduced odds of MDD are therefore stronger in females than in males.

The association between PW and ADHD at each wave varied by gender (Type III $p = 0.03$ for the PW*time*gender interaction). Using models stratified by gender, the adjusted odds ratio for a 1-SD increase in PW and ADHD were 0.36 (95% CI: 0.30–0.44) at Wave 1, 0.48 (95% CI: 0.40–0.58) at Wave 2, and 0.47 (95% CI: 0.39–0.57) at Wave 3, for males. For females, the AOR's were 0.37 (95% CI: 0.28–0.49) at Wave 1, 0.29 (95% CI: 0.21–0.39) at Wave 2, and 0.36 (95% CI: 0.25–0.53) at Wave 3. No significant gender interactions were found for anxiety or DBD (available upon request). No significant interactions between PW and age group (childhood versus adolescence) were found for any disorder (available upon request).

3.4. Sensitivity analyses

Alternative final models were run excluding those respondents who were not mother figures to verify whether the inclusion of caretakers who were not mothers could be biasing our results ($N = 2300$). We found a very similar pattern of results (available upon request).

Additional analyses were performed considering age as a continuous variable and the AOR and CI for PW and interactions with PW were nearly identical to those reported in Table 3 (available upon request).

4. Discussion

Results from the present study indicated that PW is related to a lower probability of a child presenting a psychiatric disorder (anxiety, MDD, ADHD and DBD) and such associations are independent of other parenting/family factors (parental coercive discipline, monitoring, psychopathology, familism, and parental social support). PW demonstrated a broad, as opposed to disorder-specific effect, and has a clinically meaningful impact, as it was relevant at the disorder, rather than the symptom level like the majority of prior studies. Over the course of two subsequent years, the influence of PW on internalizing disorders remained steady while it weakened for externalizing disorders (ADHD and DBD). Parental warmth was more strongly associated with MDD for girls than for boys. The association of PW with MDD varied by socio-cultural context, with stronger associations in Puerto Rico than in the South Bronx.

Why might PW relate to children's psychiatric disorders?—Having a warm parent may help anxious children to tolerate negative affect, promote emotion regulation, and, in turn, reduce their sensitivity to anxiety (Gottman et al., 1997). In relation to MDD, PW is likely to create a safe atmosphere that facilitates the child's sense of self-worth and increases self-confidence and efficacy (Rapee, 1997). For externalizing disorders including DBD and ADHD, it is likely that PW supports the internalization of parental rules and moral values and fosters the child's capacity to modulate arousal (Tronick, 1989). Consequently, a child with a warm parent would be able to improve self-regulation of both external behavioral problems (e.g., inappropriate impulses, distractibility) and internal states (e.g., emotions, empathy) (McKee et al., 2008). However, there may be specific subgroups for whom the protective effect of PW may not apply (e.g. children with psychopathic traits) (Chinchilla and Kosson, 2016). Overall, PW appears relevant across disorders possibly because it is essential to youths' development of appropriate emotion regulation skills, a central ability to both internalizing and externalizing psychopathology.

Our study also aimed to determine how the association between PW and child psychiatric disorders varied over time. The influence of PW on externalizing disorders was significant at all time points, but weakened over the course of the two-year assessment period, consistent with the previous finding that the influence of PW on externalizing symptoms such as ADHD diminishes over time (Linares et al., 2010). A possible explanation could be that the quality of coexisting parental responsiveness may be a more robust predictor of the onset of externalizing problems. Also, as children age, other factors may become more important and have a stronger influence on externalizing behaviors later on (e.g., peer influences). Internalizing disorders, on the other hand, had a stable association with PW over the two-year course. These findings are relevant for parenting-based interventions. For example, it is possible that when targeting MDD and anxiety, the emphasis of PW could occur only in the

initial stages of the intervention, while interventions targeting externalizing disorders may need to continue working on parent-child relationship over time for their effects to hold.

The association between PW and MDD and ADHD was moderated by gender, with a stronger protective effect found for girls than for boys. Hale et al. (2008) found similar results for MDD. Another study with the same Puerto Rican sample documented that, compared to boys, girls were more protected against antisocial behaviors by a cultural-familial factor (familism; Morcillo et al., 2011). It is possible that girls are more relationship oriented, therefore placing greater emphasis on their relations to parents and being more sensitive to the influence of familial factors. It remains unclear, however, why this gender protective pattern would be restricted to MDD and ADHD and not extended to the other disorders examined.

Our findings support previous research that PW exerts a positive influence on children's development across different sociocultural contexts for all disorders examined with the exception of MDD. We advanced existing literature by studying the same ethnic group in different sociocultural contexts. We found that PW was more protective in relation to MDD in PR than in the SB. We hypothesize that, compared to families in PR, those in the SB face more sociocultural challenges (e.g., higher levels of exposure to violence and discrimination (Ramos-Olazagasti et al., 2013)), and therefore the beneficial effect of PW may reach a ceiling effect in the SB as stressors accumulate. The only other study that was able to examine PW in individuals with similar backgrounds but different sociocultural contexts (Mexican families in Mexico and Latin American families in the US) (Varela et al., 2009) found that maternal acceptance was related to more anxiety symptoms among the Latin American children while the protective effect was observed among Mexican children living in Mexico. In both ours and Varela's studies, PW was protective in the "home" context. The lower level of acculturation of Latin Americans in Varela's study, compared to our sample of Puerto Rican families in the SB, may explain differences in results among families living in a context where they were an ethnic minority. It is not clear why these differences would be restricted to one specific disorder (MDD). It is possible that MDD is more highly influenced by the sociocultural stressors present in contexts like the SB than other disorders, but this is a speculative hypothesis that requires further examination.

The present study addresses a gap in the literature by suggesting that PW promotes Puerto Rican children's psychological adjustment over time by reducing the likelihood of developing anxiety, MDD, ADHD and DBD in two sociocultural contexts. The strength of the association between PW and ADHD and DBD diminished over time, suggesting some specificity on youth internalizing versus externalizing disorders in relation to PW. The large sample size selected probabilistically, the longitudinal design, high compliance rate at follow-up and the use of a standardized diagnostic interview, are some of the study's main strengths. The present sample was exclusively focused on Puerto Rican youth and the findings may not generalize to other Latino populations; nevertheless, it provides information about a well-defined homogenous Latino subgroup at high risk for psychiatric disorders. We were unable to examine paternal influence as only a small proportion of informants were fathers (1.8%). Future studies should include a higher number of fathers as their parenting behaviors may be at least as influential as mothers' (Rohner et al., 2005).

Reliability of some parenting practices, which were not PW, was not optimal. Finally, parents reported on both PW and psychiatric disorders; biases associated with social desirability and shared method variance is possible. Future research should include child report of psychiatric problems and other observational or behavioral measures of PW.

Family-centered approaches offering education and support to parents can bolster parenting competence and warmth, which can improve outcomes for children (Stormshak et al., 2011). Examples are Child Parent Psychotherapy (Lieberman et al., 2006; Lieberman et al., 2005), Parent-Child Interaction Therapy and the Triple P-Positive Parenting Program, which focuses on specific parenting factors, such as increasing parental warmth and reducing parental hostility (Thomas and Zimmer-Gembeck, 2007). Our results suggest that for children from one specific Latino subgroup, improvements in parental warmth may protect children against the development of different types of psychiatric disorders independently of other relevant parenting behaviors. Increasing parental warmth may be more beneficial for girls than for boys. Overall, we corroborated the notion that parental warmth reduces the risk of developing psychiatric disorders regardless of social context; however, in specific cases (e.g. MDD), it is possible that other risk factors may trump PW's effect.

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Fig. 1.

Interaction term PW*wave plot for ADHD and DBD for the total sample Note: SD: Standard Deviation. PW: Parental warmth.

Table 1

Descriptive statistics for the total sample (n = 2,491).

Variables	Percentage/Mean	SE
Youth age W1(10 years), %	47.46	1.29
Gender (female), %	49.10	1.14
Poverty (below F.P.L), %	65.91	1.76
Mother's age, <i>M</i>	34.10	0.19
Mother's education, %		
<High school	42.81	1.76
High school	43.04	1.70
College+	14.15	1.21
Single-parent family, %	42.60	1.73
Parental warmth W1, <i>M</i>	2.47	0.01
Anxiety, %		
W1	6.19	0.56
W2	4.76	0.68
W3	3.83	0.53
MDD, %		
W1	1.59	0.27
W2	1.06	0.29
W3	1.20	0.28
ADHD, %		
W1	7.54	0.83
W2	6.86	0.68
W3	5.57	0.76
DBD, %		
W1	5.91	0.67
W2	5.65	0.51
W3	5.35	0.60
Family processes W1		
Parental coercive discipline, <i>M</i>	0.50	0.02
Parental monitoring, <i>M</i>	14.08	0.08
Parent psychopathology, %	29.37	1.38
Familism (parent), <i>M</i>	2.24	0.02
Social support, <i>M</i>	1.18	0.02

Note: Weighted data. W1: Wave 1; W2: Wave 2; W3: Wave 3. SE: Standard error.

Table 2

Correlations among family processes.

Variable (at Wave 1)	1	2	3	4
1. Parental warmth				
2. Parental coercive Discipline	-0.40 ***			
3. Parental monitoring	0.30 ***	-0.12 ***		
4. Familism (parent)	0.05 *	-0.10 ***	-0.08 ***	
5. Social support	0.07 ***	-0.02	0.04 *	0.06 ***

*Note:**
 $p < 0.05$;**
 $p < 0.01$;***
 $p < 0.001$.

Table 3

PW (W1) and child psychiatric disorders (W1-W3): Random effects longitudinal models.

Child psychiatric disorders (W1-W3)									
Child anxiety		Child MDD		Child ADHD		Child DBD			
AOR	95%CI	AOR	95%CI	AOR	95%CI	AOR	95%CI	AOR	95%CI
PW, W1	0.69 *	0.60–0.79	0.49 *	0.41–0.58	0.36 *	0.31–0.42	0.28 *	0.24–0.34	
PW, W2					0.41 *	0.35–0.48	0.36 *	0.30–0.43	
PW, W3					0.44 *	0.37–0.52	0.46 *	0.39–0.54	

Note. We only report by wave if the interaction PW*time is significant. AOR = adjusted odds ratio for other factors: site, age, gender, poverty, mother's age, mother's education, marital status, parent coercive discipline, parental monitoring, parental psychopathology, familism and social support; CI = confidence interval; PW, parental warmth; W1, Wave 1; W2, Wave 2; W3, Wave 3;

* Significant results $p < 0.05$.

Table 4

PW (W1) and Child Psychiatric Disorders (W1, W2, W3): Significant interactions with site and gender.

	Child MDD		Child ADHD			
	Averaged W1-W3		W1		W2	
	AOR	95%CI	AOR	95%CI	AOR	95%CI
Gender						
Male	0.59	0.47–0.75	0.36	0.30–0.44	0.48	0.40–0.58
Female	0.38	0.29–0.50	0.37	0.28–0.49	0.29	0.21–0.39
Site						
South Bronx	0.52	0.43–0.63				
Puerto Rico	0.31	0.20–0.48				

Note. AOR = adjusted odds ratio for other factors: age, poverty, mother's age, mother's education, marital status, parental coercive discipline, parental monitoring, parental psychopathology, familism and social support; CI = confidence interval; PW, parental warmth; W1, Wave 1; W2, Wave 2; W3, Wave 3.