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PARENTAL FAMILISM AND ANTISOCIAL BEHAVIORS: DEVELOPMENT, GENDER AND POTENTIAL MECHANISMS

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Abstract

Objective—To examine the relationship between parental familism (strong values of attachment to nuclear and extended family members) with youth antisocial behaviors over time.

Method—Sample: Puerto Rican children aged 5-13 years at baseline residing in the South Bronx in New York (n=1,138) and in the Standard Metropolitan Area in San Juan and Caguas, Puerto Rico (n=1,353) and followed up over 2 waves one year apart from 2000 to 2003.

Measures—Parental familism was assessed using an adaptation of Sabogal's Familism Scale. Level of youth past year antisocial behaviors was measured by the antisocial behavior index (ASBI). The association between familism and ASBI over three waves was examined through mixed models stratified by age and gender, adjusted by site (South Bronx or San Juan), propensity scores reflecting site differences in family income, maternal age and education, plus environmental and child risk factors. Specific family processes were examined as potential mediators.

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Results—Parental familism was protective against antisocial behaviors among girls [estimate(SE)=−0.11(0.03), $p<0.001$ for 5-9 year-old; estimate(SE)=−0.15(0.03), $p<0.0001$ for 10 or older]. For boys, parental familism was only protective among 5-9 year-olds [estimate (SE)=−0.09(0.03), $p=0.0008$]. The protective effect of parental familism on antisocial behaviors operated mostly through parent-child relationships for 5-9 year old children and parental attitudes/behaviors towards youth high-risk behaviors for both age groups.

Conclusions—Familism may protect youth against increasing levels of antisocial behaviors (except for boys who are 10 years or older). Incorporating familism as part of therapeutic approaches addressing antisocial behaviors for youth may be helpful.

Keywords

Familism; antisocial behaviors; gender; Puerto Rican; parenting processes

INTRODUCTION

Familism is defined as a “strong identification and attachment of individuals with their families (nuclear and extended) as well as strong feelings of loyalty, reciprocity and solidarity among members of the same family”.¹ Familism involves attitudes and behaviors that emphasize the centrality of the family as a unit and main source of support /guidance. Although these values are important for most cultures, familism is a core value among Hispanic populations.^{1, 2} The early internalization of familial values and rules by children may facilitate acceptance of societal norms³ and, possibly, play a role in preventing the development of antisocial behaviors (ASB).⁴⁻⁷

Although most of research on risk factors for ASB has focused on socioeconomic characteristics⁴, family functioning/structure,⁵ exposure to violence,⁶ and parenting behaviors,⁷ evidence supports an inverse association between familism and adolescent ASB.⁸⁻¹⁰ Basic questions on the topic are, however, still unanswered. First, as most studies are cross-sectional, how familism may influence ASB at different developmental stages is unclear. Second, it is not known whether the relationship between familism and ASB is the same for both genders. Lower lifetime prevalence and later (adolescent) onset of ASB have been mainly described for girls¹¹. Biological (especially hormonal) factors, overall lower impulsivity/hyperactivity levels throughout development, and the greater “affiliative socialization”¹² may protect girls against ASB in childhood. These factors may also increase the girls’ disposition to establish good parent-child relationships, thus being highly influenced early on by family values and behaviors.¹³ A third unanswered question is *how* values related to family loyalty, reciprocity and attachment may prevent ASB later in life.

Family therapy coupled with parent management training constitutes the most effective intervention for youth with ASB.^{14, 15} Multilevel preventive interventions focused on family involvement to prevent behavioral problems among Hispanic adolescents have been developed.¹⁶ Thus, learning about the role that familism may play in the development of ASB can inform preventive intervention strategies, particularly among Hispanic youth, but possibly among other racial/ethnic backgrounds as well. While current empirically supported therapies mainly focus on relevant systemic factors that exacerbate or maintain

the child/adolescent problem,¹⁷ it is possible that conveying familism values to the younger children (who are building a moral system based on their families) - such as being available when a family member has a problem, or knowing that one can talk with family members to share difficulties in life - may facilitate the development of empathy, bonding and attachment to family members, all of which are protective against ASB.¹⁸

We found initial evidence that parental familism was cross-sectionally related to disruptive behavior disorders.¹⁹ In longitudinal analyses, we have previously documented that the trajectory of ASB among Puerto Rican youth was different for those living in San Juan as compared to those living in the South Bronx, NYC, where risk was elevated.²⁰ We also demonstrated that higher level of parental Anglo cultural orientation was related to more severe child ASB.²¹ Despite converging evidence, the possible role of parental familism in preventing ASB over time still needs to be addressed.

In the current study, we examined the relationship between parental familism and youth ASB over time in a sample of 2,491 Puerto Rican youngsters living in two different settings. We hypothesized that among families with higher levels of parental familism, lower levels of youth antisocial behaviors would be found over the course of three years, suggesting that familism can be protective against developing antisocial behaviors. We also hypothesized that the relationship between parental familism and ASB would be stronger among girls than among boys.

METHOD

Sample

Detailed information about the sample and methods of the study from which these data are drawn is provided elsewhere.^{19, 22} Briefly, the Boricua Youth Study (BYS) is a longitudinal study involving 2,491 Puerto Rican boys and girls aged 5-13 years at baseline residing in the South Bronx, NYC (SB, n=1,138) and in the Standard Metropolitan Area in San Juan and Caguas, Puerto Rico (PR, n=1,353). Each sample was a multistage probability sample of households of the target population, weighted to represent the populations of Puerto Rican children in the two contexts.

Children aged 5-13 years at baseline were followed over three waves of data collection one year apart. The eligibility criteria for the original sample included: (a) at least one child in the household aged 5-13 years identified as being of PR background; (b) at least one primary caretaker also identified as being of PR background. Up to three eligible children per household were included. In households with more than three eligible children, three were selected at random. Interviews were administered in both English and Spanish.

At baseline, 89% of the adult informants were biological mothers, 4.5% grandmothers, 2.8% adoptive mothers or stepmothers and 1.8% biological fathers. Completion rate at baseline was 84.7%. The completion rates for the first and second follow-ups were, respectively, 92% and 88%.

The study was approved by the Institutional Review Boards at the New York State Psychiatric Institute and the University Of Puerto Rico Medical School.

Measures

Parental Familism—Familism level was measured through parental responses to items from an abbreviated adapted version of the Sabogal's Familism Scale¹ administered at baseline and follow-ups 1 and 2 to the adult respondent, predominantly mothers (the main caretakers of the study children). Response options ranged from 0 ("strongly agree") to 3 ("strongly disagree"). Ten items of Sabogal's more extensive parent scale (originally including 14 items) were considered to have face validity and applicability to Puerto Ricans at both sites and were selected for the current study. An exploratory factor analyses of baseline data using mean- and variance- adjusted maximum likelihood (MLMV) estimator and Quartimin rotation indicated that the 10 selected items could be grouped in a 3-factor structure compatible with the item distribution in dimensions of the original Sabogal scale [Model fit indicators: CFI=0.996 and RMSEA=0.027]. The dimensions described by Sabogal were: 1) *Familial Obligations* (e.g., "one should make sacrifices in order to guarantee a good education for his/her children"); 2) *Support from Family*: (e.g., "When someone has problems he/she can count on help from his/her relatives"); 3) *Family as Referents* (e.g., "Much of what a son or daughter does should be done to please the parents"). At baseline, the internal consistency of this abridged parental familism scale yielded Cronbach's alpha of 0.77 in the South Bronx and 0.76 in Puerto Rico. An attempt was made to develop child versions of the scale, however, resulting scales yielded low internal consistencies ($\alpha < 0.30$). Therefore, child familism was not included in the present study.

Antisocial Behavior Index (ASBI)—ASB was assessed using the Antisocial Behavior Index (ASBI) developed for the Boricua Youth Study (BYS), described in detail elsewhere²³ and included in previous reports.^{20, 21} The ASBI includes a total of 113 antisocial behaviors obtained from parent responses to the conduct disorder and oppositional defiant disorder schedules of the Diagnostic Interview Schedule for Children (DISC-V)²⁴ and from children's responses to the Elliot Delinquency Scales.²⁵ The ASB level of each behavior was determined based on the ratings of nine experts who assigned a score from 0 to 5 to each behavior.^{20, 23} Experts' ratings were made according to the behavior's frequency considering their level of seriousness/severity for a specific age group.²³ Based on responses to all ASB items, each child was assigned a specific score on the ASBI at each wave. The ASBI reflects the worst level of ASB manifested in a specific wave; if two or more behaviors of the same level of severity are present, the child's ASBI goes up to the next level of severity. The ASBI therefore takes into account severity, frequency of occurrence during the previous year and presence of multiple behaviors so that the developmental trajectory of antisocial behavior followed by each child could be traced over the three waves. Levels 0 and 1 of ASBI are considered as representing none or trivial ASB; levels 2, 3, 4, and 5 represent increasing frequency, heterogeneity and seriousness of ASB.

Environmental and Child Risks—Several risk factors were measured as part of the BYS.²² We grouped selected scales to represent 2 different dimensions: Environmental

risks (6 scales) and Child Risks (16 scales). For each one of these dimensions, we entered the scales in a principal component analysis from which we extracted a single factor,²² retaining a scale if it had standardized loadings of 0.40 or more. Surviving scales (5 for Environmental Risks and 5 for Child Risks) were factored once again, and a regression-based estimate of the factor score was computed (see Table 1). Scales ultimately used to represent each dimension were: (a) *Environmental risks*: Exposure to violence [11 items],²² school environment [8 items],¹⁹ peer delinquency [16 items for 10+ y.o. and 12 items for 5-9 y.o],²⁶ stressful life events [21 items],^{27, 28} and an adaptation of the Home Environment Scale [11 items].²⁹ (b) *Child Risks*: Early aggressivity [6 items], poor social adjustment [2 items], poor academic performance [10 items], lack of talents and special skills, and peer relationships [5 items].³⁰

Family Processes: Potential Mechanisms¹⁹—A similar strategy was used to group scales representing three distinct family processes: (a) *Negative family influences* (initially 14 scales reduced to 4) which include overall family functioning and support (Family functioning [5 items],³¹ parent social support [6 items],³² religiosity [5 items],³³ and single parent family [1 item]). (b) *Ineffective family structuring* (3 scales) addressing parental attitudes and behaviors towards high-risk behaviors (Parental monitoring [9 items],⁷ parental discipline [9 item]²⁷ and parental attitudes towards delinquency [28 items]²⁶). (c) A single scale measuring parent-child relationship, “*Maternal acceptance/warmth*” [13 items]³⁰ was also included (despite its failure to emerge from the data reduction screen), since it was a variable associated with ASB in prior analyses of the data^{19, 20} and a key dimension of interest. The Chronbach alpha for this single scale used as an indicator of parent-child relationship was 0.68.

The stability of the dimensions representing both risk and family processes over three waves support the reliability of all five dimensions of risk and family processes: indicators of each dimension were highly correlated over time (median correlation of each risk variable over the three follow ups is 0.64 in Puerto Rico and 0.54 in the South Bronx).³⁴ The parent was the informant for all scales, except for those under environmental risks and peer relations which were based on child report.

Statistical Analysis

For each wave of data, we calculated the mean and standard error of parental familism, for boys and girls, 5-9 years old and 10 or older. Because our main interest was examining whether parental familism was prospectively related to ASBI, further analyses were focused on familism at baseline. Using SUDAAN software (release 8),³⁵ these estimates took into account the sampling design, i.e., the fact that up to three children per family were assessed, and that families were nested within primary sampling units.

We then estimated the ASBI over the three waves of measurement as a function of baseline parental familism and time using multiple regression analyses. Before doing so, because youth at the two sites might have differed in their sociodemographic composition, we generated propensity scores to be used as adjustment in the regression analysis.³⁶ This method created groups of PR and SB youth that were comparable on a number of variables.

To create the propensity scores, we used logistic regression analysis with site as the dependent variable and maternal age, maternal education and family income as independent variables. Based on this analysis, we defined a total of five groups, or propensity score strata. Indicators of these strata were included in all regression models testing the main study hypothesis described below. Because the variable 'site' represents more than measured socio demographic factors, it was also included in our regression models.

In the multiple regression analysis, we used mixed linear models to relate level of parental familism at baseline to ASBI (dependent variable). Weighted analyses were carried out with the MIXED procedure of SAS version 9.1³⁷ with restricted maximum likelihood estimation. These models allowed the sample weights and multiple levels of nesting of the data to be taken into account. Time was coded 0 for baseline and 1 and 2 for the first and second follow-up interviews. The initial models (Model 1) included, besides familism and time, propensity scores and site. We proceeded to adjust this model by the possible confounders Environmental and Child Risk (Model 2). In the final set of analyses, we examined the role of negative family influences, ineffective family structuring, and lack of maternal warmth as family processes which could possibly mediate the relationship between baseline parental familism and ASBI over time. As Model 2 reflected the association between parental familism and ASBI adjusting for risk factors (path c), the next step was to define the association between familism and each potential mediator (negative family influences, ineffective family structuring and lack of maternal warmth), using regression analyses where the mediators were the dependent variable, while familism and risk factors were the independent variables (path a). Then, we determined the relationship between the potential mediator and ASBI (path b) and proceeded to examine the indirect effect of familism on ASBI, through the mediator, by using Model 2 plus the mediator (path c'). Based on the principles of Baron and Kenny,³⁸ and as suggested by MacKinnon,³⁹ we considered mediation as likely if paths a, b and c were statistically significant. We conducted Sobel tests to further support our conclusions.

All analyses were stratified by gender and age group at baseline (5- 9 years old and 10 years and older) as, based on the previous literature, we would expect the influence of parental familism on ASBI to be stronger among girls and to vary with age, since younger children are usually under more direct and exclusive influence of their families compared to older children.

RESULTS

Table 1 reports descriptive statistics for all study variables by site. Compared to the PR site, families in the SB had lower levels of maternal education and were more frequently single parent families. Furthermore, levels of Environmental and Child Risks and Negative Family Influences were higher in the SB than in PR. In contrast, levels of Ineffective Structuring were higher in PR. Parental familism and ASBI values at baseline and each follow-up for specific age and gender groups are reported in Table 2. In general, mean values of parental familism remained stable over time for each age and gender group.

Table 3 shows the association between baseline parental familism with ASBI over three years and associations corresponding to the different paths necessary to test potential mediators. Parental familism at baseline was inversely associated with ASBI over the course of three years among 5-9 year-old boys and girls. In the older group (10 years and older), higher parental familism values were still related to lower levels of ASBI over time among girls, whereas baseline parental familism was no longer related to ASBI among boys in this age group (Model 1).

When models were further adjusted for Environmental and Child Risks (Model 2), parental familism at baseline remained significantly associated with lower levels of ASBI over three study waves among girls and was still significant among younger boys only. These results did not vary by site, as the interaction terms between parental familism with site were not statistically significant. Results also did not vary over time, except for 5 – 9 year-old girls (interaction term parental familism $\times$ time: $est = -0.05$, $SE = 0.02$, $p = 0.03$), suggesting that the strength of the association between parental familism and ASBI among girls and in this age group increases over time.

Mediation analysis (Table 3) indicated that *Ineffective Structuring* (parental attitudes/ behaviors towards youth high-risk behaviors) was a potential mediator of the relationship between parental familism and ASBI for all groups. Among young children only (5-9 y.o.), *Lack of Maternal Warmth* (parent-child relationship) was also a possible mediator for both genders, while *Family influences* (family functioning and support) had this role among young boys only.

DISCUSSION

Our study, based on a sample of 2,491 Puerto Rican children and adolescents, investigated parental familism as a possible protective factor for ASB. Our results indicated the relevance of considering gender and age when addressing the relationship between parental familism and youth ASB. Our key findings were: (1) Parental familism was inversely related to ASB over time; (2) The effect of parental familism on ASB varied by age and gender: among girls, it was protective against ASB, independently of age, even after adjusting for risk factors for ASB; among boys, parental familism was only protective among 5-9 year-olds; and (3) in all groups for which a protective relationship between parental family values and ASB was detected, such relationship was potentially mediated by parental attitudes/ behaviors towards youth high-risk behaviors. Moreover, parent-child relationship was a potential mediator among younger children only, while overall family functioning and support was a potential mediator among young boys only.

Supporting our main hypothesis, our findings indicate that level of parental familism at baseline was inversely associated with ASB over time (except for older boys). These results are consistent with previous cross-sectional studies.⁸⁻¹⁰ The influence of familism on ASB may be understood within the context of development. Parental family values were protective against ASB over time for young (5 – 9 year old) boys and girls. This indicates that early on, for both genders, familism has a protective effect against ASB during a developmental stage that is key to the later internalization of moral norms. At this early age,

children tend to behave according to external rules (like parental values) to avoid negative consequences, not fully achieving their own internalized moral system until they reach late adolescence or early adulthood.^{40, 41} The protective effect of parental values in early developmental stages may represent a crucial influence for the future development of children. However, the possible role of co-existing biological factors should also be considered. For instance, parents with more traditional family values have children who may, for genetic reasons as well, tend to engage in the same attitudes and beliefs of their parents.

We detected gender differences in the association between parental familism and ASB among older children. Such differences may also reflect the differential impact of specific risk or protective factors during development. Whereas preschool girls and boys tend to display similar levels of aggressiveness, different trajectories emerge early in childhood; by age 5, boys are three times as likely as girls to have conduct disorder.^{42, 43} After preschool, boys tend to have elevated rates compared to girls,^{4, 44} and girls present the highest levels of ASB around adolescence. The “gender paradox” related to ASB⁴⁵ refers to the fact that girls, despite having lower rates and a later onset of ASB, usually present a more severe evolution with higher psychiatric comorbidities throughout life.⁴⁶ This suggests that finding gender-specific risk and protective factors may be crucial to prevent future disorders. For instance, some studies have shown that family dysfunction and stressors are more likely to increase behavioral and emotional dysfunctioning in girls than in boys.^{5, 47, 48} Our results also provide some insight on the differential role that specific family aspects may have on the development of ASB across gender. Boys are not protected by parental familism as they get older, and may be more strongly influenced early on by overall lower parental support and functioning than girls, a finding in line with previous research.⁵ It has also been shown that parents tend to exhibit different attitudes towards girls when compared to boys, such as more frequent parental supervision and monitoring^{49, 50} which in turn, could lead girls to be less likely to engage in relationships with deviant peers and adhere to family and societal rules. The greater “affiliative socialization”, i.e. the tendency for girls to present higher emotional closeness and intimacy in interpersonal relationships, could also help them to maintain parental and social bonds, leading to a better quality of parent-child relationship.⁵¹ Furthermore, girls tend to develop empathic concerns and guilt earlier in life than boys^{52, 53} which may be directly influenced by parental norms and familism. Hormonal factors, such as higher levels of oxytocin in girls (which is related to nurturing and caregiving attitudes) and lower testosterone along with lower temperamental impulsivity and hyperactivity levels, may also play a role in these differences.¹² Other factors, classically described for girls, such as greater development of verbal abilities and lower rates of school failure may also contribute to their lower rates of ASB.^{6, 44, 54}

We also addressed which family processes may mediate the protective effects of familism against ASB. Although specific underlying mechanisms are unknown, there is evidence that high levels of familism are related to better overall family functioning,⁵⁵ stronger parent-child bonding^{8, 56} and higher levels of parental monitoring⁵⁷. Our results suggest that those parents with higher familism may influence their children’s level of ASB because they would have a warmer parent-child relationship towards young children and stricter attitudes towards high-risk behaviors throughout development. These family processes play an

important role in promoting prosocial behaviors and lessening the impact of associations with deviant peers,^{10, 58, 59} a well-known risk factor for ASB.

Our findings address a gap in the literature by strongly suggesting that familism protects children from manifesting higher levels of ASB and sheds light on possible therapeutic approaches that emphasize the importance of conveying values of support and guidance among family members. Targeting these aspects may be more promising than focusing on socioeconomic risk factors for ASB which may be more difficult to modify.

The large sample size of our study, the inclusion of a very young Hispanic population (often not part of prior studies which were more focused on pubertal youth), its longitudinal design and high compliance rate at follow-up, are some of its main strengths. The study also has a number of limitations. First, despite the longitudinal design, reverse causation could still explain the results, as children with ASB could lead to lower parental familism by affecting the same family processes considered here. However, a sensitivity analysis conducted (results available upon request) by assessing the effect of familism on ASB only among participants who had very low levels of ASB at baseline (ASB<3) yielded comparable results. Second, our sample was composed exclusively of Puerto Rican youth and the findings may not generalize to other Hispanic populations. Third, given the composition of most families and the age of the children, our indicators of familism were almost exclusively based on mothers' reports, with little information on the views of other members of the family. Fourth, ASB included in diagnostic schedules and assessment scales are predominantly male-oriented behaviors and females may have unique ways of manifesting antisocial deviance.⁶⁰

Despite these limitations, the findings contribute to the understanding of how culture and family influence the lives of Hispanic children. Therapies recommended for conduct disorder^{14, 15} do not generally focus on fostering strong familial values and cohesiveness as part of their therapeutic approaches. If our findings are supported by further evidence, considering familism when evaluating and treating children of Puerto Rican background may be an example of culturally competent mental health care, and a hope for future prevention programs.

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Table 1

Descriptives by Site

	South Bronx (N=1,138)			Puerto Rico (N=1,353)		
	Mean/%	SE Mean	Mean/%	SE Mean	t/X2	p
Age, years [mean]	9.2	0.1	9.2	0.1	0.64	0.52
Female, %	50.9	1.3	51.1	1.5	0.01	0.93
Maternal Education > High School, %	10.3	1.3	32.4	2.6	64.45	<0.001
Single parent family, %	45.4	2	27.8	2.4	30.49	<0.001
Parental Familism [mean]						
Baseline	2.24	0.02	2.25	0.02	-0.42	0.6773
Follow-up 1	2.15	0.02	2.19	0.02	-1.25	0.2147
Follow-up 2	2.11	0.02	2.12	0.02	-1.32	0.1895
ASBI [mean]						
Baseline	2.11	0.02	2.15	0.02	0.67	0.5061
Follow-up 1	1.19	0.04	1.05	0.05	2.18	0.0315
Follow-up 2	1.10	0.05	0.87	0.04	3.75	0.0003
<u>Risks</u>						
Environmental risks [mean]	3.7	0.09	2.47	0.09	9.68	<0.001
Negative child characteristics [mean]	-6.35	0.06	-7.29	0.07	10.1	<0.001
<u>Family Processes</u>						
Negative family influences [mean]	-7.39	0.08	-8.89	0.1	11.85	<0.001
Ineffective family structuring [mean]	-6.83	0.04	-6.66	0.05	-2.7	0.0082
Lack of maternal warmth [mean]	-2.39	0.01	-2.39	0.01	-0.13	0.8989

Note: ASBI = Antisocial Behavior Index; FU=Follow-up

Table 2

Parental Familism and ASBI by gender and age over three study waves

	Baseline				Follow-up 1				Follow-up 2			
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
5-9 year olds												
Parental Familism	628	2.22	0.03	588	2.23	0.03	565	2.12	0.03	548	2.17	0.03
Child ASBI	653	1.62	0.07	618	1.34	0.07	608	1.43	0.08	562	1.11	0.07
10 and older												
Parental Familism	652	2.27	0.03	613	2.24	0.02	608	2.17	0.03	559	2.18	0.03
Child ASBI	631	1.40	0.07	589	0.96	0.06	566	1.17	0.08	550	0.96	0.06

Note: ASBI = Antisocial Behavior Index

Table 3
Regression Results for Parental Familism and Antisocial Behaviors (ASBI) over 3 study waves

	5-9 year-old						10+ year-old					
	Male (N=631)			Female (N=589)			Male (N=653)			Female N=(618)		
	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Model 1												
Parental Familism	-0.07	0.03	0.0166	-0.11	0.03	0.0002	-0.04	0.03	0.2675	-0.18	0.03	<0.0001
Model 2												
Parental Familism	-0.09	0.03	0.0008	-0.11	0.03	<0.0001	-0.02	0.03	0.5350	-0.15	0.03	<0.0001
Mediation (tested in Model 2)												
Path a: Familism → Negative Family Influences	-0.15	0.02	<0.0001	-0.08	0.02	0.0002	-0.15	0.02	<0.0001	-0.10	0.02	<0.0001
Path b: Negative Family Influences → ASBI	0.10	0.03	0.0024	0.01	0.03	0.7245	0.12	0.03	0.0007	0.06	0.03	0.1066
Path c': Familism → ASBI adjusting for Negative Family Influences	-0.08	0.03	0.0042	-0.11	0.03	<0.0001	0.0001	0.03	0.9806	-0.14	0.03	<0.0001
Sobel Test	-0.01	0.005	0.012	0.001	0.002	0.89	NA	NA	NA	-0.004	0.003	0.20
Path a: Familism → Ineffective Structuring	-0.09	0.02	0.0001	-0.1024	0.02	<0.0001	-0.07	0.02	0.0014	-0.09	0.02	0.0002
Path b: Ineffective Structuring → ASBI	0.12	0.02	<0.0001	0.24	0.03	<0.0001	0.25	0.03	<0.0001	0.21	0.03	<0.0001
Path c': Familism → ASBI adjusting for Ineffective Structuring	-0.08	0.03	0.0018	-0.09	0.03	0.0005	0.0001	0.03	0.9631	-0.13	0.03	<0.0001
Sobel Test	-0.01	0.003	0.004	-0.02	0.01	0.0001	NA	NA	NA	-0.02	0.005	0.0001
Path a: Familism → Lack of Maternal Warmth	-0.07	0.02	0.0003	-0.09	0.02	<0.0001	-0.05	0.02	0.0189	-0.06	0.02	0.0037
Path b: Lack of Maternal Warmth → ASBI	0.29	0.03	<0.0001	0.38	0.03	<0.0001	0.31	0.03	<0.0001	0.30	0.03	<0.0001
Path c': Familism → ASBI adjusting for Lack of Maternal Warmth	-0.07	0.03	0.0043	-0.08	0.02	0.0013	0.0001	0.03	0.9702	-0.13	0.03	<0.0001
Sobel Test	-0.02	0.03	0.001	-0.03	0.03	0.0001	NA	NA	NA	-0.02	0.03	0.79

Note: All models were adjusted for propensity score strata and site. Model 2 further adjusts for potential confounders: Environmental and Child Risks. Path c' examines the indirect effect of familism on ASBI through the mediator, (negative family influences, ineffective family structuring, and lack of maternal warmth) by using Model 2 (adjusted by environmental and child risk factors) plus the mediator. Bold text indicates statistically significant values (p<0.05).

NA= Not Applicable (association in Model 2 is not statistically significant)