Published in final edited form as:

Child Psychiatry Hum Dev. 2012 October ; 43(5): 761–774. doi:10.1007/s10578-012-0295-0.

Symptoms of Anxiety and Associated Risk and Protective Factors in Young Asian American Children

Keng-Yen Huang, Sabrina Cheng, Esther Calzada, and Laurie Miller Brotman

NYU Child Study Center, 1 Park Ave, 7th floor, New York, NY 10016, USA

Department of Child and Adolescent Psychiatry, New York University School of Medicine, New York, NY, USA

Keng-Yen Huang: Huangk01@nyumc.org

Abstract

Anxiety is one of the most prevalent mental health problems in young children but there has been a dearth of studies focusing on Asian American children. This study examines the patterns and the predictors of childhood anxiety and related symptoms in young children in a diverse Asian American (ASA) sample ($n = 101$). Findings indicate that ASA children are at higher risk for anxiety, somatization, and depressive problems than their peers. Parents' level of acculturation (i.e., American identity, English competence), parental negative emotion socialization, conflicted parent-child relationship, child emotional knowledge and adaptive skills, as well as teachers' ethnic background and school class types were all associated with ASA children's anxiety. A combination of cultural, family, and school factors explained from 17 to 39 % of the variance in anxiety symptoms. Findings inform prevention services for young ASA children.

Keywords

Asian American; Anxiety; Somatization; Acculturation; Parenting; Risk factor

Introduction

Anxiety is one of the most prevalent mental health problems in children, with a lifetime prevalence between 8 and 27 % and functionally impairing prevalence between 4 and 7 % [1]. During early childhood, anxiety affects up to 12 % of children and depression affects approximately 1 % of children [2]. Anxiety disorders as defined in the Diagnostic and Statistical Manual occur in approximately 12 % of 5-year-olds and 8 % of 2- to 3-year-olds [1]. Co-occurrence of subtypes of anxiety disorders is common over the life course; with high levels of co-morbidity between social and generalized anxiety [3, 4] and anxiety and depression [5]. Studies of young children (ages 2–6) find high co-occurrence among five subtypes of anxiety (social phobia, separation anxiety, generalized anxiety, obsessive-compulsive disorder, and fears of physical injury), with scale score intercorrelations ranging

from .45 to .87 [6]. Childhood anxiety is relatively stable, and without intervention, it can interfere with school performance [7, 8] and adaptive functioning [9, 10] and predicts high school drop-out [8] and substance abuse [11].

Studies of anxiety in young children are complicated by the presence of some anxiety symptoms and behaviors as part of the normal developmental processes [1]. For example, separation anxiety is common and normative for children between the ages of 7 months and 2.5 years; children between ages 6 and 9 are often afraid of a variety of animals [1, 12]. Children who experience anxiety symptoms in early childhood above and beyond what is typical for the specific phase of development are at risk for continued anxiety and related problems.

Although impairing anxiety often has its roots in early childhood, the study of anxiety among young Asian Americans (ASAs) has been limited. This is a major gap in the literature given that ASAs are one of the fastest growing minority populations in the United States (US) with 17 million ASAs (or 6 % of the total population) in 2010 and a projected population of more than 40 million (or 9 % of the total population) by 2050 [13, 14].

There is some evidence to suggest that young ASA children might be at greater risk for anxiety disorders relative to white Americans. A study using nationally representative data (the Early Childhood Longitudinal Study-Kindergarten Class; ECLS-K), found that ASA kindergarten children have significantly higher levels of internalizing problems and lower interpersonal relationship skills relative to kindergarten children from US-born white families [15]. Studies of older children have also found comparable [16] or higher rates of generalized anxiety, social anxiety, and fears in ASA children compared to whites [17, 18]. This study addresses gaps in the literature by investigating anxiety symptom patterns and potential predictors (e.g., parent cultural identity, criticism) of anxiety among young ASA children.

Several factors have been proposed in the literature that may explain the higher risk for anxiety among ASA children. Evidence in the areas of *acculturation and parenting* have documented that low English competence in Asian immigrant parents is associated with high parent acculturation stress and child emotional problems [19, 20]. Lower level of parent acculturation (e.g., low American identity) is associated with greater family conflict [21], and family conflict has been related to anxiety in ASA children [22]. In addition, relative to parents from other ethnic groups, ASA parents tend to maintain traditional cultural values (collectivism, hierarchy) and exert higher levels of control (e.g., use of restricted rules or criticism) [23, 24]; parental control in ASA families of older children has been associated with more negative parent-child relationship [25] and more child depression and anxiety [26]. Furthermore, there is a general emphasis on control and discouragement of emotion expression in ASA culture [27], and parental discouragement of emotion expression has found to be associated with higher distress and anxiety in children [28, 29].

Evidence in *child factors* have suggested that limited English competency predicts more internalizing problems among 10–11 year old ASA children [20]. Gender preferences in ASA culture (e.g., value males more than females, placing more family roles and

responsibility for males) [30] is likely to associate with different patterns of parent–child interaction (e.g., discourage of negative emotion in boys) and child mental health outcomes [31, 32]. Furthermore, school-aged Asian children with fewer social skills and emotional competencies have found to be associated with higher levels of anxiety symptoms [27]. Studies of *school factors* also suggest children in childcare with greater demands (including longer hours) are more likely to exhibit problem behavior [33], and student–teacher match on race/ethnicity is related to better teacher–child relationship [34], which may protect children from mental health problems [35].

Building on the risk factors of anxiety, this current study was guided by ecological and emotion regulation frameworks. The *ecological framework* emphasizes the individual as both a catalyst for his or her own development and as a product of external factors (family, culture, school) [36]. The *emotion regulation framework* proposes that children construct an understanding of behaviors within the context of social interaction and relationships, particularly caregivers (e.g., parents, teachers) [37]. Therefore, parent–child and teacher–child relationships and parenting style (e.g., use of control), are expected to be associated with child development and well-being [38–40]. Guided by these two conceptual frameworks, this study examines the extent to which *parent acculturation* (American/ethnic identity, English competence), *parenting behaviors* (emotion socialization, parent–child conflict, parental criticism), *child characteristics* (gender, social skills, emotion knowledge, language), and *school factors* (teacher race/ethnicity, demands of the classroom) are associated with young ASA children’s anxiety symptoms.

This study addresses three research questions: (1) Do levels of anxiety and related symptoms in young ASA children differ from published rates for non-Asian children in the US or Asian children from other countries? (2) Are patterns of co-morbidity between anxiety and related symptoms in ASA children similar to patterns described in the literature for non-Asian children? (3) Do parenting, acculturation, child and school factors predict anxiety symptoms in young ASA children? Based on the ecological and emotional regulation frameworks and the existing empirical literature, we hypothesized that ASA children would have higher levels of anxiety symptoms relative to others; and that patterns of co-morbidity would be similar to patterns reported in the literature (high correlations among subtypes of anxiety). Among ASA children, we hypothesized that higher level of parental acculturation, lower level of critical parenting, higher levels of child social and emotional competencies and male gender would be associated with lower anxiety symptoms. Finally, we hypothesized that aspects of the classroom environment (shorter day and same ethnicity teacher) would predict lower levels of anxiety symptoms.

Methods

Participants

Study participants include 101 ASA children and their caregivers. About half of the families (56 %) were poor (see definition below). The children had a mean age of 4.16 (SD = .45) years old, 50 % were boys, and all were enrolled in Pre-Kindergarten (Pre-K) programs in a large urban city. The majority of the participating caregivers were mothers (91 %; 9 % were fathers) with a mean age of 34.15 (SD = 6.01) years. Most (85 %) parents were married, 41

% were educated in the US, and 44 % had more than a high school education. Most (89 %) of the children were born in the US, while the majority (94 %) of parents were born outside the US, with 87 % immigrating after age 12. On average, immigrant parents lived in the US 11.79 (SD = 8.13) years. About half of the sample was Chinese American (48 % from China, 6 % from Hong Kong, 1 % from Taiwan). The other 16 % of parents were Bangladeshi, 17 % were Indo-Caribbean (descendents of Indians who had migrated to Caribbean countries, and maintained Indian cultural practices, traditions and religion), and 11 % were from other countries (i.e., Korea, India, Nepal, US-born Asian). 70 % of parents reported speaking two languages, 19 % spoke English only, and 12 % spoke Chinese only.

Procedure

Participants were recruited from 12 Pre-K programs in community-based organizations between October 2008 and April 2010. Families of children between 3 and 5 years of age in which at least one parent was born in Asia or self-identified as Asian were eligible for the study. Pre-K programs were identified through a regional Pre-K program list. Programs that served large numbers of Asian children were contacted. Program directors were asked to distribute fliers to families and study staff were available at pick-up and drop-off times to describe the study procedures to families. Eligible and interested parents were scheduled for a one-time assessment at the Pre-K program site, where they provided informed consent and were interviewed. For parents with scheduling constraints, interviews were conducted by phone. All interviews were conducted in English or Chinese by bilingual research staff (Chinese parents were English or Chinese speaking, and all other Asian parents were English speaking). Parents reported on their parenting, cultural values, demographic characteristics and child behavior. Children were evaluated individually at school to assess school readiness skills and emotion knowledge. The full study sample included 221 children. Half way through the study (in 2009), we were able to introduce a more comprehensive assessment of anxiety symptoms via the Preschool Anxiety Scale (PAS). Because the full sample completed the Behavioral Assessment System for Children (BASC), we were able to compare those with and without the PAS measure. Families with and without PAS data did not differ on family demographics (e.g., child gender, parent immigration or acculturation status), parenting, or parent-reported BASC anxiety score ($p > .05$). This study of anxiety is based on the 101 families with both PAS and BASC measures. The study was approved by the University IRB.

Measures

The *Preschool Anxiety Scale* (PAS) [6] assesses five areas of anxiety symptoms: generalized anxiety (5 items), social anxiety (6 items), separation anxiety (4 items), fears of physical injury (7 items) and obsessive compulsive disorder (5 items) in children aged 3–5 years. Parents rated each item on a 5-point scale (0 = not true at all; 4 = very often true). The generalized anxiety ($\alpha = .72$), social anxiety ($\alpha = .72$), and fear of physical injury ($\alpha = .73$; e.g., scared of heights, thunder storm, animals, dark) scales showed adequate reliability. We excluded the obsessive compulsive ($\alpha = .45$) and separation anxiety ($\alpha = .59$) scales because of inadequate reliability.

The *Behavioral Assessment System for Children-2nd Edition* (BASC-2)—Preschool Version [41] assesses multi-dimensional problem behaviors. The BASC-2 is a standardized measure with well-established psychometric properties that includes a list of behaviors that reflect externalizing problems (e.g., aggression, hyperactivity), internalizing problems (e.g., anxiety, depression, somatization), and adaptive skills (e.g., adaptability, social skills, functional communication). Parents rated each item in terms of how often their child has engaged in each behavior during the past 4 weeks on a 4 point scale (0 = never, 3 = almost always). For the purpose of symptom evaluation, three anxiety related scales (i.e., unspecified anxiety, somatization, and depression) and the adaptive skills composite (included as one child factor) were used. The anxiety (13 items, $\alpha = .71$), somatization (13 items, $\alpha = .80$), depression (11 items, $\alpha = .70$), and adaptive skills composite (37 items, $\alpha = .86$) scales had adequate internal consistencies in the current study sample.

Abbreviated Multidimensional Acculturation Scale (AMAS) [42] measures parent acculturation. Parents rated each item on a 4-point-likert scale (1 = “not at all”/or “strongly disagree”; 4 = “extremely well” or “Strongly agree”). The AMAS taps into cultural competence (the individual’s knowledge of the culture as well as his or her ability to function competently within it) and identity. This study utilized *US identity* (6 items, $\alpha = .92$) and *Ethnic/Asian identity* (6 items, $\alpha = .94$) scales. *Parents’ English competence* in reading, writing, speaking and understanding (4 items, $\alpha = .95$) was rated by parents on a four-point scale (1 = not at all; 4 = very well).

Parent–Child Relationship Scale [43] (12 items, $\alpha = .81$) measures parents’ perceptions about the quality of the parent–child relationship on a 5-point likert scale (1 = definitely does not apply; 5 = definitely applies).

Criticism is a 3-item scale ($\alpha = .67$) developed for this study to measure critical behaviors commonly observed in ASA families [44, 45]. These items, rated on a 5-point scale (1 = Never; 5 = more than 3 times per week), assess the frequency with which parents lecture/scold their child, tell their child that he/she is not as good as other children, or tell their child to behave like other more successful children. The scale was meaningfully related to other negative parenting constructs (e.g., negative emotion socialization $r = .35$ and harsh parenting $r = .30$) in the study sample.

The Responses to Children and Emotion Questionnaire (RTCE; 18 items; $\alpha = .93$) [46] assesses parent emotion socialization practices. The parent reported the frequency with which his/her child experienced certain emotions over the past month (i.e., sad, angry, scared); then the parent rated how often he/she used different socialization strategies (i.e., reward, punish, neglect) in response to child emotions on a 5-point likert scale (1 = Never; 5 = Very Often). A broadband summary score of Negative Emotion Socialization was used. Higher scores indicate responding with punishment or neglect of negative child emotions.

The Preschool Emotion Interview (PEI) [47] (24 items; $\alpha = .93$) measures children’s knowledge and understanding of emotion. Children are presented with a series of faces (happy, angry, sad, and scared), emotional and contextual cues, and are asked to identify the

emotion. A summary score was used, with higher scores indicating greater emotion knowledge.

School Factors. Teachers reported on their language status (English only vs. bilingual) and ethnic status (Asian vs. other). Length of school day (full day vs. half day) was reported by parents.

Demographic Characteristics. Families reported on child language status (0 = English only, 1 = bilingual), parent education, occupation status, household composition, and income. Poverty status was calculated based on family income and household size using the Health and Human Services poverty guidelines of 2009 and 2010. Families that met the federal definition of poverty and/or received any poverty-related social services (e.g., WIC, TANF, housing assistance, social Medicaid, food stamp) were defined as poor.

Analyses

Descriptive analyses were first conducted to inspect the study variables. All continuous study variables, including the PAS and BASC subscales were normally distributed. To understand whether ASAs were at higher risk for anxiety problems, we compared the mean scale scores of the anxiety scales with mean scale scores reported in the literature. To evaluate the pattern of co-occurrence of anxiety and related symptoms, we evaluated the magnitude of association (r) among the three PAS scales and three BASC symptoms scales. To identify risk and associated factors for anxiety, a series of liner regression analyses were conducted, with anxiety symptoms included as continuous outcome variables. We conducted four sets of analyses, with separate analyses for acculturation, parenting, child and school predictors. In the analyses for parent, child and school predictors, we also controlled for acculturation factors (i.e., American and Asian identity, language competence). In each set of analyses, we examined predictors separately for subtypes of anxiety. To better understand clinical significance, we conducted an additional set of logistic regression analysis by including dichotomized anxiety scales (1 = at-risk for anxiety/standardized T score ≥ 60) as outcome variables on the BASC scales. We did not use the clinical cut-off T score of 70 because of the small N for the “clinical” subgroup ($n = 3-11$).

Results

Anxiety and Related Symptoms

In examining ASA children’s functioning (Table 1), we compared the mean scale scores of the PAS from our sample with the PAS mean scale scores reported in the literature. Comparison rates are available from a study of Hong Kong Chinese children [48] and Australian children [6]. Relative to same age children in Hong Kong (Mean (SD) = 4.30 (2.79) for general anxiety, 5.29 (2.97) for social anxiety, and 5.57 (2.80) for physical injury fears), ASA children had higher physical injury fears (Mean = 9.19), but similar levels of general anxiety and social anxiety. Relative to same age Austrian children (Mean (SD) = 2.20 (2.51) for general anxiety, 4.29 (4.02) for social anxiety, and 5.92 (4.60) for physical injury fears), ASA children had higher scores on all three scales (1–3 point differences on a 5-point scale).

Next we considered BASC T scores (mean of 50 with ± 10 SD) in the ASA sample relative to published norms from a representative US sample (60 % White, 20 % Hispanic, 15 % African American, and 5 % other). We found ASA children had higher T scores on all scales, especially for anxiety and somatization symptoms. About one third of the ASA sample (31–33 %) was at-risk for anxiety and somatization problems ($T \geq 60$), and 8–11 % was in the clinical range ($T \geq 70$). For depressive symptoms, about 33 % was at-risk and 3 % was at clinical range.

Patterns of Co-occurrence of Anxiety Symptoms

In examining co-occurrence of symptoms, we found expected patterns (see Table 2). Specifically, generalized anxiety was related to social anxiety ($r = .61$), and social anxiety was related to fear of physical injury ($r = .37$). Generalized anxiety, but not social anxiety or physical injury fear, was related to somatization and depressive symptoms.

Predictors of Anxiety Symptoms

As shown in Table 3, we found that parental English competency and American identity were the most robust predictors for anxiety related symptoms. High parental American identity was associated with lower child somatization and depression. High parental English competency was also associated with lower general anxiety, but higher depressive symptoms. In addition, as predicted, high parent–child conflict was associated with high general anxiety and depression, and negative emotion socialization practices were associated with increased generalized anxiety. Contrary to expectations, parental criticism was not associated with any anxiety or related symptoms after adjusting for other parenting and family cultural variables.

In examining *child factors*, as hypothesized, we found that adaptive skills were associated with less physical injury fear, somatization, and depressive symptoms. High emotion knowledge was associated with fewer anxiety and somatization symptoms. Relative to girls, boys were less likely to have high anxiety symptoms on the BASC; and no gender differences were observed on any other subscales.

For *school factors*, teachers' ethnic background and length of stay in school type of class were found to be related to children's anxiety. Specifically, ASA children taught by Asian teachers were more likely to have physical injury fear than those taught by non-Asian teachers. Children in half day Pre-K were more likely to have anxiety symptoms and somatization symptoms than children in full day classes.

The combination of family, cultural, parenting, child, and school factors contributed 17–39 % of the variance in anxiety symptoms. The percent of variance explained was larger for general anxiety (38 %) than for social anxiety and physical fear (17–23 %).

Analyses of predictors of dichotomized subgroups (1 = at-risk for anxiety/ $T \geq 60$) were highly consistent with predictors of anxiety as a continuous outcome. Logistic regression analyses identified 5 predictors of anxiety problems: parental American identity, parent–child conflict, adaptive skills, emotion knowledge, and attending full day class. These

finding were consistent with results reported earlier (which identified 6 predictors) based on continuous outcome measures (Table 4).

Discussion

This study investigated patterns of anxiety and related symptoms as well as factors associated with early childhood anxiety in young ASA children. Consistent with our hypotheses, we found that ASA children were at greater risk for anxiety symptoms relative to non-Asian US children and Non-US Asian children. Approximately one third of ASA children were at elevated risk for anxiety, somatization and depressive problems, relative to 12–15 % reported in the literature [2]. Patterns of co-morbidity were generally consistent with the hypothesis and literature. Specifically, generalized anxiety and social anxiety commonly co-occurred, and generalized anxiety was more likely to co-occur with somatization and depressive symptoms than social anxiety or fear. In contrast, social anxiety and fear did not co-occur with symptoms of somatization and depression. Overall, findings of high rates of anxiety and expected patterns of comorbidity provide support that young ASA children are at elevated risk for a range of mental health problems, and this is a population worthy of further investigation.

This study identifies a range of risk factors at the individual, family and school level that may be key to understanding anxiety symptoms in ASA children, a necessary step for the development of informed prevention strategies. Consistent with the literature [31, 49], boys were less likely than girls to have high rates of anxiety, and child adaptive and social skills were related to lower levels of anxiety symptoms. This study extends this literature by employing an objective test of child knowledge of emotional cues and understanding of emotional states; emotion knowledge and understanding were meaningfully related to BASC scales of Anxiety and Somatization. Relations were significant when anxiety was considered as both continuous and categorical variables.

Consistent with the literature in US and older ASA child samples [22, 28, 38], aspects of parenting were associated with anxiety symptoms. In this study, we examined a range of parenting practices given their relevance to anxiety in general and also Asian culture. As expected, children from families characterized by higher parent–child conflict was associated with higher anxiety (i.e., PAS-general anxiety, BASC-anxiety) and related symptom scales (i.e., BASC-somatization and depression), and when anxiety symptoms were considered as both continuous and categorical variables. Parent negative emotion socialization practices to child negative emotional states were specifically associated with PAS generalized anxiety but not BASC global measure of anxiety subscale. This may indicate specificity of the association, and underscore the importance of studying subtypes of anxiety separately to fully understand childhood anxiety in Asian American children.

Contrary to our expectation, the measure of parental criticism used in this study was not associated with anxiety and related symptoms after adjusting for parent–child conflict and emotion socialization. There are several explanations for this finding. It is likely that parent–child relationships and emotion socialization practices are better predictors than criticism during this early developmental period. From a cognitive developmental perspective, it is

also likely that young children are not cognitively mature enough to internalize parents' message of criticism (e.g., disappointment and shaming) [50, 51]; therefore, criticism is not related to anxiety symptoms in young ASA children. It is also possible that the association between parental criticism and anxiety is moderated by other contextual factors (e.g., parental warmth, family emotion climate) that were not examined in this study. Some studies suggest that parental control may not be directly related to minority children's mental health functioning; instead, the association is influenced by the context in which criticism is used. The impact of parental control/criticism on the development of anxiety in children is only likely for children whose parents use both high control and low warmth [26, 52]. Future studies need to further investigate the direct and moderation associations using longitudinal data.

In addition to considering child social emotional competencies and three aspects of parenting, this study is the first to explore how family and school culture factors related to preschool-aged ASA children's anxiety. We found that young ASA children living with parents with low parental American identity, low parental English competency, and having an Asian Pre-K teacher were associated with higher rates of anxiety. The consideration of ethnicity and acculturation characteristics of adult caregivers is an important area of study for minority children [53]. In the context of findings relating family and parenting predictors for childhood anxiety, there is a clear need for more comprehensive investigation of parallel processes in the classroom. For ASA children, this is especially important given that many ASA parents intentionally select childcares that have Asian teachers. Future studies should consider relations among teacher behavior management practices, teacher-child relationship, teacher acculturative status, childrearing belief and ASA children's mental health outcomes.

The finding that children in full-day classrooms had lower levels of anxiety and somatization than children in half-day classrooms was unexpected and deserves further investigation. Our prediction was based on previous studies relating longer days to externalizing problems [1, 33]; it is possible that different mechanisms are operating for ASA children or anxiety symptoms in children more generally. The class-type finding may suggest length of time spent in school and home may be related to different environmental exposure. It is possible that ASA children who spend more time at home are associated with higher exposure of negative parenting and more conflicted parent-child relationship, which lead to higher anxiety symptoms. Therefore, increased time spent in school can be a potential protective factor for some subtypes of anxiety in ASA children.

This study has several limitations. It is based on a cross-sectional study design with a relatively small sample. Most participants were English-speaking parents and only a subset of the full original sample was included for the analyses. Although we found no sample characteristic differences (i.e., family demographic, parenting, parent acculturation, BASC-child functioning) between those who were included or excluded in the analyses, we cannot completely eliminate selection bias. In addition, this study was of a pan-ethnic Asian American sample. The subsamples of families from different countries of origin were not large enough for meaningful subgroup comparisons. Future studies should further explore childhood anxiety for families from different countries of origin and replicate study in larger samples using a longitudinal design. Furthermore, given the low reliability of the PAS

subscales of separation anxiety and obsessive compulsive symptoms, future work should also consider the appropriateness of existing anxiety assessment tools for use in young ASA children and further investigate separation anxiety and obsessive compulsive symptoms in this population.

Despite these limitations, the study adds to the extant literature on ASA children's mental health and suggests addition areas for further investigation. In addition to describing high rates of anxiety and expected patterns of co-morbidities, we have identified a set of potentially relevant child, family, school and cultural factors that could be targeted for preventive intervention. Our findings suggest some cross-culture similarity on risk and protective factors of childhood anxiety, which also imply that existing evidence-based family and school interventions that effectively engage parents and teachers may hold promise for the prevention of anxiety in ASA children.

For example, program such as ParentCorps and Strengthening Early Emotional Development (SEED) may be promising for implementation with high-risk ASA children. ParentCorps is a culturally-informed child mental health promotion program for families held at preschools with facilitation by teachers. It focuses on promoting teachers' culture competence, parent-child relationship, positive parenting practices, child emotion knowledge, and adaptive skills. It has shown to be effective in promoting positive parenting and child adaptive behaviors, as well as preventing child internalizing and externalizing problem in a culturally diverse sample [54]. Similarly, SEED is an early childhood anxiety prevention program incorporates emotional socialization practices related to anxiety, parent-child relationships, child emotion knowledge and understanding and coping strategies. The SEED program has shown to result in increased child emotion knowledge and understanding and lower rates of anxiety in parents and children [55]. These and other culturally-informed early childhood interventions hold promise for promoting ASA children's mental health outcomes.

Summary

Current psychopathology research in childhood anxiety has not focused on Asian American children despite the fact that anxiety appears to be more common in this population. In addition, existing research has ignored the contribution of cultural and school factors on children's anxiety symptom development. This study addressed several major gaps in the literature by examining patterns of anxiety and related symptoms and risk/protective factors in young ASA children. Using the ecological and emotion regulation frameworks, this study considered important contextual and cultural factors in home and school environments that likely contribute to the higher rates of anxiety among ASA children. Our findings support a complex interplay among parenting, child, and cultural factors, and suggest that culturally-informed early interventions that alter home and school context for young ASA children hold promise for effective anxiety prevention.

Acknowledgments

This research was funded by a grant to the first author from the National Research Center of Excellence – NYU Center for the Study of Asian American Health supported by the National Center on Minority Health and Health

Disparities (P60 MD000538-05). We thank the participating families, Pre-K programs and volunteer research assistants Jenny Moy, Xem Bui, Melissa Mak, Stefani Kim, Sadia Hussain, Sarah Bakar, Tiffany Anderson, Anne Kay and Pavita Singh.

References

1. Costello EJ, Egger HL, Angold A. The developmental epidemiology of anxiety disorders: phenomenology, prevalence, and comorbidity. *Child Adol Psychiatric Clin North Am.* 2005; 14:631–648.
2. McDonnell MA, Glod C. Prevalence of psychopathology in preschool-age children. *J Child Adol Psychiatric Nurs.* 2004; 16:141–152.
3. Turner SM, Beidel DC, Borden JW, Stanley MA, Jacob RG. Social phobia: axis I and II correlates. *J Abnorm Psychol.* 1991; 100:102–106. [PubMed: 2005265]
4. Rapee RM, Sanderson WC, Barlow DH. Social phobia features across the DSM-III-R anxiety disorders. *J Psychopathol Behav Assess.* 1988; 10:287–299.
5. Angold A, Costello EJ, Erkanli A. Comorbidity. *J Child Psychol Psychiatry.* 1999; 40:57–87. [PubMed: 10102726]
6. Spence SH, Rapee RM, McDonald C, Ingram M. The structure of anxiety symptoms among preschoolers. *Behav Res Therapy.* 2001; 39:1293–1316.
7. Ialongo N, Edelsohn G, Werthamer-Larsson L, Crockett L, et al. The significance of self-reported anxious symptoms in first grade children: Prediction to anxious symptoms and adaptive functioning in fifth grade. *J Child Psychol Psychiatry.* 1995; 36:427–437. [PubMed: 7782406]
8. Duchesne SP, Vitaro F, Larose S, Tremblay RE. Trajectories of anxiety during elementary-school years and the prediction of high school noncompletion. *J Youth Adolesc.* 2008; 37:1134–1146.
9. Ialongo N, Edelsohn G, Werthamer-Larsson L, Crockett L, et al. The significance of self-reported anxious symptoms in first-grade children. *J Abnorm Child Psychol.* 1994; 22:441–455. [PubMed: 7963077]
10. Langley AK, Bergman RL, McCracken J, Piacentini JC. Impairment in childhood anxiety disorders: preliminary examination of the child anxiety impact scale-parent version. *J Child Adol Psychopharmacol.* 2004; 14:105–114.
11. Merikangas KR, Mehta RL, Molnar BE, Walters EE, Swendsen JD, Aguilar-Gaziola S, et al. Comorbidity of substance use disorders with mood and anxiety disorders: results of the International Consortium in Psychiatric Epidemiology. *Addict Behav.* 1998; 23:893–907. [PubMed: 9801724]
12. Westenberg, PM.; Siebelink, BM.; Treffers, PDA. Psychosocial developmental theory in relation to anxiety and its disorders. Cambridge, UK: Cambridge University Press; 2001.
13. US Census Bureau. Asian/Pacific American heritage month. US Census Bureau; 2011.
14. US Census Bureau. An older and more diverse nation by Midcentury. US Census Bureau; 2008.
15. Huang K-Y, Calzada E, Cheng S, Brotman LM. Physical and mental health disparities among young children of Asian immigrants. *J Pediatr.* 2012; 160:331–336. [PubMed: 21907351]
16. Gee CB. Assessment of anxiety and depression in Asian American Youth. *J Clin Child Adol Psychol.* 2004; 33:269–271.
17. Weine AM, Phillips JS, Achenbach TM. Behavioral and emotional problems among Chinese and American children: parent and teacher reports for ages 6 to 13. *J Abnorm Child Psychol.* 1995; 23:619–639. [PubMed: 8568084]
18. Farver JM, Xu Y, Bhadha BR, Narang S, Lieber E. Ethnic identity, acculturation, parenting beliefs, and adolescent adjustment: a comparison of Asian Indian and European American families. *Merrill-Palmer Q.* 2007; 53:184–215.
19. Beiser M, Hamilton H, Rummens JA, Oxman-Martinez J, Ogilvie L, Humphrey C, et al. Predictors of emotional problems and physical aggression among children of Hong Kong Chinese, Mainland Chinese and Filipino immigrants to Canada. *Social Psychiatric Epidemiol.* 2010; 45:1011–1021.
20. Han WJ, Huang CC. The forgotten treasure: Bilingualism and Asian children's emotional and behavioral health. *Am J Public Health.* 2010; 100:831–838. [PubMed: 20299654]

21. Farver JAM, Narang SK, Bhadha BR. East meets west: Ethnic identity, acculturation, and conflict in Asian Indian families. *J Fam Psychol.* 2002; 16(3):338–350. [PubMed: 12238415]
22. Juang LP, Alvarez AA. Discrimination and adjustment among Chinese American adolescents: family conflict and family cohesion as vulnerability and protective factors. *Am J Public Health.* 2010; 100:2403–2409. [PubMed: 20966371]
23. Chao, R.; Tseng, V. Parenting of Asians. In: Bornstein, MH., editor. *Handbook of parenting: vol 4 social conditions and applied parenting.* 2nd edn. Mahwah: Lawrence Erlbaum Associates; 2002. p. 59-93.
24. Shek DTL. Perceived parental behavioral control and psychological control in Chinese adolescents in Hong Kong. *Am J Family Ther.* 2006; 34:163–176.
25. Lau S, Lew WJF, Hau K-T, Cheung PC, Berndt TJ. Relations among perceived parental control, warmth, indulgence, and family harmony of Chinese in mainland China. *Dev Psychol.* 1990; 26:674–677.
26. Quach, A. Gender differences in *parenting*, adolescent functioning, and the relation between *parenting* and adolescent functioning in urban Mainland *Chinese* families. College Park: University of Maryland; 2008.
27. Tao A, Zhou Q. Parental reactions to childrens' negative emotions: prospective relations to Chinese children's psychological adjustment. *J Family Psychol.* 2010; 24:135–144.
28. Suveg C, Zeman J, Flannery-Schroeder E, Cassano M. Emotion socialization in families of children with an anxiety disorder. *J Abnorm Child Psychol.* 2005; 33:145–155. [PubMed: 15839493]
29. Feng X, Shaw DS, Silk JS. Developmental trajectories of anxiety symptoms among boys across early and middle childhood. *J Abnorm Psychol.* 2008; 117:32–47. [PubMed: 18266484]
30. Coombs CH, Coombs LC, McClelland GH. Preference scales for number and sex of children. *Popul Stud.* 1975; 29:273–298.
31. Beidel DC, Turner SM, Hamlin K, Morris TL. The social phobia and anxiety inventory for children (SPAI-C): external and discriminative validity. *Behav Ther.* 2000; 31:75–87.
32. Golda SG, Wendy KS. Gender role orientation and fearfulness in children with anxiety disorders. *J Anxiety Disord.* 2000; 14:57–67. [PubMed: 10770236]
33. Belsky J, Vandell DL, Burchinal M, Clarke-Stewart KA, McCartney K, Owen MT, et al. Are there long-term effects of early child care? *Child Dev.* 2007; 78:681–701. [PubMed: 17381797]
34. Saft EW, Pianta RC. Teachers' perceptions of their relationships with students: effects of child age, gender, and ethnicity of teachers and children. *School Psychol Q.* 2001; 16:125–141.
35. Pianta RC, Nimetz SL. Relationships between children and teachers: associations with classroom and home behavior. *J Appl Dev Psychol.* 1991; 12:379–393.
36. Bronfenbrenner U. Ecology of the family as a context for human development: research perspectives. *Dev Psychol.* 1986; 22:723–742.
37. Brown JR, Dunn J. Continuities in emotional understanding from 3 to 6 years. *Child Dev.* 1996; 67:789–802. [PubMed: 8706526]
38. Gerlsma C, Emmelkamp PMG, Arrindell WA. Anxiety, depression, and perception of early parenting: a meta-analysis. *Clin Psychol Rev.* 1990; 10:251–277.
39. McLeod BD, Wood JJ, Weisz JR. Examining the association between parenting and childhood anxiety: A meta-analysis. *Clin Psychol Rev.* 2007; 27:155–172. [PubMed: 17112647]
40. van der Bruggen CO, Stams GJ, Bögels SM. Research review: the relation between child and parent anxiety and parental control: a meta-analytic review. *J Child Psychol Psychiatry.* 2008; 49:1257–1269. [PubMed: 18355216]
41. Reynolds, C.; Kamphaus, RW. *BASC-2 behavioral assessment system for children manual.* 2nd edn. Circle Pines: American Guidance Services, Inc.; 2004.
42. Zea MC, Asner-Self KK, Birman D, Buki LP. The abbreviated multidimensional acculturation scale: empirical validation with two Latino/Latina samples. *Cult Div Ethnic Minor Psychol.* 2003; 9:107–126.
43. Pianta, RC. *Child-parent relationship scale.* Charlottesville: University of Virginia; 1992.

44. Fung H. Becoming a moral child: the socialization of shame among young Chinese children. *Ethos*. 1999; 27:180–209.
45. Wang Q. “Did you have fun?” American and Chinese mother-child conversations about shared emotional experiences. *Cogn Dev*. 2001; 16:693–715.
46. O’Neal CR, Magai C. Do parents respond in different ways when children feel different emotions? The emotional context of parenting. *Dev Psychopathol*. 2005; 17:467–487. [PubMed: 16761554]
47. Garner PW, Jones DC, Miner JL. Social competence among low-income preschoolers: emotion socialization practices and social cognitive correlates. *Child Dev*. 1994; 65:622–637. [PubMed: 8013243]
48. Li J-H, Lau W-y, Au T-f. Psychometric properties of the Spence Children’s Anxiety Scale in a Hong Kong Chinese community sample. *J Anxiety Disord*. 2011; 25:584–591. [PubMed: 21353457]
49. Gouley KK, Brotman LM, Huang K-Y, Shrout P. Construct validation of the social competence scale in preschool-age children. *Soc Dev*. 2007; 17:380–398.
50. Gershoff ET, Grogan-Kay A, Lansford JE, Chang L, Zelli A, Deater-Deckard K, et al. Parent discipline practices in an international sample: associations with child behaviors and moderation by perceived normativeness. *Child Dev*. 2010; 81:487–502. [PubMed: 20438455]
51. Wood JJ, McLeod BD, Sigman M, Hwang WC, Chu BC. Parenting and childhood anxiety: theory, empirical findings, and future direction. *J Child Psychol Psychiatry*. 2003; 44:134–151. [PubMed: 12553416]
52. Deater-Deckard K, Dodge KA. Externalizing behavior problems and discipline revisited: nonlinear effects and variation by culture, context, and gender. *Psychol Inq*. 1997; 8:161–175.
53. Garcia Coll CT, Lamberty G, Jenkins R, MacAdoo HP, Cinic K, Wasik BH, et al. An integrative model for the study of developmental competencies in minority children. *Child Dev*. 1996; 67:1891–1914. [PubMed: 9022222]
54. Brotman LM, Calzada E, Huang K-Y, Kingston S, Dawson-McClure S, Kamboukos D, et al. Promoting effective parenting practices and preventing conduct problems among ethnic minority families from low-income, urban communities. *Child Dev*. 2011; 82:258–276. [PubMed: 21291441]
55. Fox JK, Masia Warner C, Lerner AB, Ludwig K, Ryan JL, Colognori D, et al. Preventive intervention for anxious preschoolers and their parents: strengthening early emotional development. *Child Psychiatry Hum Dev*. 2012

Table 1

Descriptive results for anxiety related symptoms

	Continuous scale scores M (SD)	% At-risk(T %)	% With clinical level problem (T 70) M
PAS-generalized anxiety	3.37 (3.16)	–	–
PAS-social anxiety	5.20 (3.86)	–	–
PAS-physical injury fears	9.16 (5.42)	–	–
BASC-anxiety	55.82 (8.89)	31.3	8.1
BASC-somatization	55.57 (11.17)	33.0	11.0
BASC-depression	51.87 (8.85)	33.0	3.1

PAS preschool anxiety scale, BASC behavioral assessment system for children. Standardized T scores are reported for BASC subscales (in the standardized population, mean and standard deviation of the scale scores are 50 ± 10). % at-risk includes at-risk and above clinical level. T scores are not available for PAS; therefore, % at risk cannot be computed

Table 2

Correlations among anxiety and related symptoms

	1	2	3	4	5	6
1. PAS-generalized anxiety	1.00	.61***	.18	.46***	.27***	.25*
2. PAS-social anxiety		1.00	.37***	.31**	.03	.18
3. PAS-physical injury fears			1.00	.03	.03	.02
4. BASC-anxiety				1.00	.46***	.47***
5. BASC-somatization					1.00	.45***
6. BASC-depression						1.00

PAS preschool anxiety scale, BASC behavioral assessment system for children

* $p < .05$;
** $p < .01$;
*** $p < .001$

Table 3

Parenting, child and school predictors for anxiety related symptoms (liner regression models)

	PAS-generalized anxiety		PAS-social anxiety		PAS-physical injury fears		BASC anxiety		BASC somatization		BASC depression	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Parent acculturation												
American identity	-.56	.47	-.63	.59	-.69	.83	-1.79	1.39	-3.81*	1.77	-5.43***	1.30
Ethnic identity	.26	.44	-.17	.56	-.66	.78	-.53	1.30	-2.44	1.66	-.54	1.21
English competence	-.97**	.36	-.46	.45	-.53	.63	-.12	1.06	1.13	1.34	2.16*	.98
Parenting factors												
Negative emotion socialization	1.53**	.48	1.03	.66	-.45	.96	1.89	1.48	1.13	1.98	-.73	1.36
P-C conflict	.94*	.41	.73	.57	.02	.83	3.14*	1.29	2.61	1.70	4.15***	1.16
Criticism	.24	.29	.08	.40	.14	.59	.12	.91	1.77	1.21	.15	.83
Child factors												
Gender (1 = male)	-.04	.70	1.30	.86	-.52	1.21	-4.04*	1.94	-1.91	2.43	-2.76	1.80
Bilingual	-.54	1.00	.39	1.23	-1.33	1.74	-1.14	2.71	-4.03	3.48	1.04	2.61
Adaptive skills	-.05	.03	-.04	.04	-.11*	.05	.01	.08	-.25*	.10	-.17*	.07
Emotion knowledge	-1.04	1.08	1.52	1.33	1.09	1.88	-9.18**	2.99	-8.87*	3.77	-4.09	2.84
School factors												
Bilingual teacher	-.10	.94	.59	1.18	-2.15	1.61	1.78	2.69	2.94	3.26	1.86	2.64
Asian teacher	.72	.68	.68	.86	2.61*	1.17	1.27	1.96	.20	2.36	.45	1.90
Full day class	-.70	.72	-.39	.91	.01	1.23	-5.34*	2.09	-10.18***	2.51	-1.82	2.00
R ²	.38		.23		.17		.39		.39		.43	

PAS preschool anxiety scale, BASC behavioral assessment system for children. P-C parent-child. Bilingual (1 = yes, 0 = English only). Analyses for parent, child and school predictors were conducted separately, and controlled for 3 parent culture factors. R² are for variance explained by 13 listed predictors

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 4
Parenting, child and school predictors for anxiety related symptoms (logistic regression models)

	BASC anxiety		BASC somatization		BASC depression	
	B	SE	B	SE	B	SE
Parent acculturation						
American identity	-.29	.34	-1.17**	.40	-1.04*	.43
Ethnic identity	.06	.33	-.17	.34	.14	.41
English competence	.05	.26	.55	.29	.43	.32
Parenting factors						
Negative emotion socialization	.50	.38	-.26	.45	.20	.50
P-C conflict	.31	.34	.70*	.37	.85*	.42
Criticism	-.15	.24	.46	.25	-.04	.30
Child factors						
Gender (1 = male)	-.89	.57	-.14	.61	-1.25	.69
Bilingual	-.92	.75	-.86	.78	.63	.95
Adaptive skills	-.01	.03	-.08*	.04	-.08*	.04
Emotion knowledge	-2.39**	.91	-3.39**	1.18	-.41	.94
School factors						
Bilingual teacher	.67	.69	1.31	.76	.18	.76
Asian teacher	-.15	.50	.17	.57	.60	.59
Full day class	-1.40*	.58	-2.63***	.70	-.59	.63

BASC behavioral assessment system for children, P-C parent-child. Bilingual (1 = yes, 0 = English only). BASC outcomes were dichotomized variable (1 = problem group, 0 = no). Analyses for parenting, child and school predictors were conducted separately, and controlled for 3 parent culture factors

*
p < .05;

**
p < .01;

p < .001