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The Impacts of Family Environment and Stress Reactivity on Daily Mood for Low-Income Latino Adolescents

Stephanie K. Brewer
Loyola University Chicago

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THE IMPACTS OF FAMILY ENVIRONMENT AND STRESS REACTIVITY

ON DAILY MOOD FOR LOW-INCOME LATINO ADOLESCENTS

A THESIS SUBMITTED TO

THE FACULTY OF THE GRADUATE SCHOOL

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MASTER OF ARTS

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BY

STEPHANIE K. BREWER

CHICAGO, ILLINOIS

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CHAPTER ONE

INTRODUCTION

Low-income Latino adolescents are at an increased risk for the development of psychopathology, as the chronic stressors faced by those who grow up in poverty have an adverse cumulative effect (Evans & Kim, 2007; Evans & Kim, 2013; Grant et al., 2003; Santiago & Wadsworth, 2009; Wadsworth & Berger, 2006), and the relationship between exposure to poverty and negative mental health outcomes is intensified for ethnic minority youth (McLeod & Owens, 2004; Stein, Gonzalez, & Huq, 2012). One of the most impactful ways in which poverty causes deteriorations in adolescent mental health is through heightened levels of parent-child conflict (Conger & Donnellan, 2007; Gonzales, Pitts, Hill, & Roosa, 2000; Santiago & Wadsworth, 2009; Wadsworth & Compas, 2002). Another harmful result of the multiple stressors faced by poor youth is the dysregulation of the stress reactivity system (Evans & Kim, 2007; Wolff, Santiago, & Wadsworth, 2009). The dysregulation of this system has chronic physiological consequences that interact with psychosocial stressors such as parent-child conflict to increase the likelihood of developing psychopathology (Evans, 2003; Evans & Kim, 2007; McEwen & Seeman, 1999; Repetti, Taylor, & Seeman, 2002; Wolff et al., 2009).

For Latino adolescents, problems with mood are a particular concern. Latino adolescents have higher rates of mood problems than any other ethnic group (Centers for Disease Control and Prevention [CDC], 2012; Twenge & Nolen-Hoeksema, 2002).

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Moreover, the combination of the harmful context of poverty and heightened parent-child conflict is an antecedent of internalizing symptoms to a higher degree than other mental health problems (Caples & Barrera, 2006; Santiago & Wadsworth, 2009). It may be that, for low-income Latinos who experience higher rates of parent-child conflict and are already vulnerable to mood problems, greater dysregulation of the stress reactivity system exacerbates the impact of poverty and conflict on mood (Wadsworth & Berger, 2006; Wolff et al., 2009). This may be especially true for female adolescents, as they are more vulnerable to the effects of conflict in the family and exhibit higher rates of both depression and dysregulated stress reactivity than males (CDC, 2012; Kuhlberg, Peña, & Zayas, 2010; Santiago, Etter, Wadsworth, & Raviv, 2012; Twenge & Nolen-Hoeksema, 2002).

Fortunately, these youth may be able to benefit from the buffering effect of the cultural value of familism, common among Latinos, which encompasses a strong identification with and attachment to one's family members, a sense of reciprocity among family members, and a central role of the family in one's own identity (Kuhlberg et al., 2010; Marín & Marín, 1991; Moore & Cuéllar, 1970; Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987; Smokowski, Bacallao, & Buchanan, 2009; Smokowski, Rose, & Bacallao, 2010). Familism has been associated with better mental health functioning for Latino children and adolescents and has been identified as a protective factor against stressors for these youth in previous research (Gil, Wagner, & Vega, 2000; Kuhlberg et al., 2010; Smokowski et al., 2009; Smokowski et al., 2010). Higher levels of

familism may buffer against the harmful effects of parent-child conflict and inflated stress reactivity on mood (Gil et al., 2000; Smokowski et al., 2009).

The present study utilizes a daily diary methodology to examine these processes in a nuanced way for low-income Latino middle school students. This research seeks to describe the daily patterns of stress reactivity and mood ratings for these adolescents over the span of one week. Further, an idiographic examination of involuntary stress responses will allow for the identification of any subgroups of youth with distinct patterns of stress reactivity. If distinct patterns emerge, their relation to mood outcomes will be examined by analyzing the associations of each group membership with those youth's daily mood ratings. Next, this study examines whether greater dysregulation of the stress reactivity system exacerbates the impact of high parent-child conflict on mood problems, while greater levels of familism buffer against mood problems, using hierarchical linear models that incorporate all daily ratings for each adolescent. Finally, the effect of gender will be examined in each of these processes.

The Impact of Conflict for Low-Income Latino Adolescents

Children growing up in low-income homes face multiple chronic stressors (e.g., economic strain, exposure to violence, frequent moves or transitions, and family conflict; Wadsworth & Berger, 2006), but conflict, in particular, appears to be a key mechanism through which poverty exerts its negative effects on childhood mental health (Santiago & Wadsworth, 2009; Wadsworth & Compas, 2002). A review of the literature on childhood and adolescent stress pinpointed poverty as "one of the most significant markers of negative outcomes in children and adolescents" and implicated poverty as a key precursor

of psychopathology in a meta-analytic path analysis (Grant et al., 2003, p. 454).

Approximately one third, or 32.3% of all Latino children in the United States, are

currently living in poverty (Macartney, 2011), so it is important to understand the

mechanisms through which this context leads to poor mental health outcomes.

High levels of conflict and hostility have been linked to increased levels of

psychopathology for children in the context of poverty (Evans & Kim, 2007; Evans &

Kim, 2013; Santiago & Wadsworth, 2009; Wadsworth & Compas, 2002). Many studies

in this area have focused on interparental conflict as the mechanism through which

poverty has a negative influence on children's mental health, but research has suggested

that the impact of interparental conflict is fully explained by parent-child interactions

(Gonzales et al., 2000; Wadsworth & Compas, 2002). Other researchers have focused on

parenting styles as the key pathway through which poverty negatively affects children's

mental health; however, Caples and Barrera (2006) found that the effect of parenting on

child conduct problems and internalizing symptoms is mediated by mother- and

adolescent-reported parent-child conflict. Thus, parent-child conflict is a key construct in

explaining the impact of poverty on child and adolescent mental health. It is therefore

important to examine parent-child conflict when considering the mental health outcomes

of low-income adolescents.

The importance of parent-child conflict above other facets of the context of

poverty is supported by a recent review of research and theory regarding the impact of

socioeconomic status (SES) on child development. In this study, Conger and Donnellan

(2007) present a model in which SES has an adverse impact on children's development

by exacerbating family stress processes. The resulting parent-child conflict is the proximal process that contributes to mental health problems for children. In line with this view of development is the "risky families" model proposed by Repetti, Taylor, and Seeman (2002). These authors reviewed diverse research literatures and concluded that there is a consistent pattern in which adverse developmental outcomes result from a family environment with high conflict and aggression paired with a cold, unsupportive, or neglectful home. Thus, children living in poverty grow up in families with more frequent conflict, lower quality interactions, harsher punishment methods, and unstable parental expectations, which results in adverse mental health outcomes (Evans & Kim, 2007; Evans & Kim, 2013; Kuhlberg et al., 2010; Miller, Chen, & Parker, 2011; Santiago & Wadsworth, 2009; Wadsworth & Compas, 2002). The present study will therefore focus on the impact of parent-child conflict on adolescents rather than the more distal factors implicated in the environment of poverty.

Parent-child conflict has been specifically studied in low-income Latino populations. Latino adolescents with high levels of parent-child conflict have been shown to have consistently more internalizing problems than their peers over a period of two years (Smokowski et al., 2010). Further research with low-income Latino youth has concluded that higher levels of parent-child conflict are associated with significantly higher amounts of internalizing and externalizing symptomatology in boys and girls across all of the parent-child dyads (i.e., mother-son, mother-daughter, father-son, father-daughter; Crean, 2008). Finally, using path analysis, Kuhlberg et al. (2010) found that for adolescent Latinas, parent-child conflict has a large impact on self-esteem, internalizing

behaviors, and suicide attempts. Other results from this study included the finding that the adolescent females who had attempted suicide reported significantly higher levels of parent-child conflict than those who had not attempted suicide (Kuhlberg et al., 2010). Parent-child conflict may be particularly harmful for Latino adolescents given the central role of family in Latino cultures, and for females, the need to maintain family harmony may be even stronger than for males (Kuhlberg et al., 2010). Therefore, parent-child conflict is a key factor impacting the mental health of Latino adolescents, and especially females. There is a need for research to examine the processes that might exacerbate or mitigate this relationship.

Mood Problems for Low-Income Latino Adolescents

Among the mental health problems faced by children growing up in a context of poverty and increased parent-child conflict, of particular concern for Latino adolescents are the elevated rates of internalizing problems. In a meta-analysis of 310 samples of children, Twenge and Nolen-Hoeksema (2002) found that Latino youth exhibit greater depressive symptoms than both White and African American children (these differences represent moderate to large effect sizes; Cohen, 1977). Further, according to the Centers for Disease Control's (2012) Youth Risk Behavior Surveillance System, 24.4% of Latino boys and 41.4% of Latinas reported feeling sad or hopeless almost every day for two weeks or longer in the past twelve months. These rates are significantly higher than those found for White and African American youth (CDC, 2012). In addition, 12.6% of Latino boys and 21.0% of Latinas reported seriously considering suicide, and over one in ten Latinas (13.5%) attempted suicide at least one time in the past twelve months (CDC,

2012). Of note, these rates are consistently higher for Latina girls than for Latino boys. Further, in a review of the effects of moderators on the relation between stressors and psychopathology, Grant et al. (2006) determined that in response to stress, girls are more likely to exhibit internalizing symptoms than boys. Thus, mood problems are of concern for both Latino boys and Latina girls, though girls may be especially vulnerable.

Problems with mood may be common for low-income Latino youth because of their surrounding environmental context. When the harmful context of poverty is coupled with its resulting heightened levels of family conflict, this environment is particularly conducive to the development of internalizing symptoms (Caples & Barrera, 2006; Santiago & Wadsworth, 2009). A recent study found that while the detrimental context of poverty did not predict increases in adolescent externalizing symptoms over a period of eight months, poverty-related stress did predict an increase in depression and anxiety during that time (Wadsworth & Berger, 2006). Further, using data from both recent immigrant populations and longstanding Latino communities, higher levels of parent-child conflict have predicted higher rates of internalizing symptoms in numerous studies (Portes & Zady, 2002; Smokowski & Bacallao, 2007; Smokowski, Chapman, & Bacallao, 2007; Smokowski, Rose, & Bacallao, 2008).

Researchers in this area have noted that female adolescents may be especially vulnerable to the effects of conflict in the family, and this is even more concerning when considering the elevated levels of mood problems for females beginning in puberty (CDC, 2012; Kuhlberg et al., 2010; White & Shih, 2012). Kuhlberg et al. (2010) found that within a sample of adolescent Latinas, those who experienced more conflict with

their parents also reported higher levels of internalizing problems. These authors noted

that female adolescents might feel particularly responsible for maintaining peace within

the family (Kuhlberg et al., 2010). Thus, gender may moderate the relationship between

parent-child conflict and mood for Latino adolescents such that for males, parent-child

conflict has an effect on daily moods, but for females, this effect is more pronounced and

results in even worse daily moods. Low-income Latino adolescents, and especially

females, are at high risk for developing mood problems, and it is important to examine

the family processes and personal characteristics that may moderate this process.

While many researchers study internalizing problems and mood disorders in a

cross-sectional or longitudinal way, some have begun to recognize the utility of daily

diary methodology in examining these symptoms in a more precise and nuanced way

(Peeters, Nicolson, Berkhof, Delespaul, & deVries, 2003; Schneiders et al., 2006;

Swendsen, 1998; Weinstein & Mermelstein, 2007; Weinstein, Mermelstein, Hankin,

Hedeker, & Flay, 2007; White & Shih, 2012). Several of these researchers have identified

novel findings by comparing global ratings of mood to daily mood measurements, and

some have also linked daily mood ratings to serious mental health outcomes such as

major depression (Peeters et al., 2003; Schneiders et al., 2006; Swendsen, 1998;

Weinstein et al., 2007; White & Shih, 2012). Daily diary methodology has also been used

specifically in adolescent samples to identify associations between daily experience and

mental health in this volatile developmental period (Schneiders et al., 2006; Weinstein &

Mermelstein, 2007; Weinstein et al., 2007; White & Shih, 2012) and has further

supported the importance of examining gender differences when researching mood

(Weinstein & Mermelstein, 2007; Weinstein et al., 2007; White & Shih, 2012). The experts in this new methodological area advocate for future investigation to utilize this type of measurement to understand mood in a day-to-day context, and this may be especially valuable when fluctuations in adolescents' mood are assessed in the context of key stressors such as parent-child conflict.

Involuntary Stress Reactivity as a Vulnerability Factor for Low-Income Latino Adolescents

When examining mood outcomes for low-income Latino adolescents, it is important to consider factors that may exacerbate the impact of stressors such as parent-child conflict. A particularly harmful result of growing up in poverty is children's dysregulated stress reactivity systems (Evans & Kim, 2007; Wolff et al., 2009). As low-income Latino adolescents are coping with an accumulation of chronic stressors such as poor housing quality, poor nutrition, family stress, parent-child conflict, and discrimination, they are susceptible to experiencing increased *allostatic load*, a term used to express the chronic wear and tear on the body caused by the constant regulation of multiple physiological stress systems (Evans, 2003; McEwen & Seeman, 1999). This is a dynamic, cumulative process in which physiological and psychological demands throughout development interact with early exposure to increase children's long-term risk for physical morbidity and psychological problems (Evans, 2003; Evans & Kim, 2007; Repetti et al., 2002).

One important component of allostatic load is the activity of the hypothalamic-pituitary-adrenal (HPA) axis, which is a neurobiological system that is particularly

sensitive to experiences of novelty, uncontrollability, and social threat, all of which are

implicated in the context of poverty (Badanes, Watamura, & Hankin, 2011; Repetti et al.,

2002). Elevated resting levels of HPA activity have been associated with mental health

problems for poor youth along with the more dynamic process of stress reactivity (Evans,

2003; Evans & Kim, 2007; Wolff et al., 2009). Some researchers have studied the impact

of stress reactivity on mental health by collecting biological markers such as salivary

cortisol, salivary alpha-amylase, heart rate, systolic blood pressure, and diastolic blood

pressure (e.g., Badanes et al., 2011; Byrd-Craven, Granger, & Auer, 2011; McEwen &

Stellar, 1993; Woodall & Matthews, 1989), while others have collected self-report

measures of the related construct, involuntary engagement stress response (IESR; Wolff

et al., 2009). IESRs are the automatic responses to stress that are thought to reflect

physiological stress reactivity (e.g., physiological arousal, emotional arousal, intrusive

thoughts, and rumination), and they have been found to be higher for females than for

males (Santiago et al., 2012; Wolff et al., 2009).

In a study examining the effects of poverty-related stress on children's

psychological functioning, Wolff, Santiago, and Wadsworth (2009) argued that IESRs

have been understudied and may have a powerful impact on the mental health of children

growing up in poverty. These authors used a self-report measure that was developed to

facilitate the examination of IESRs among low-income families, and they argued that this

construct reflects one's physiological stress reactivity, as heart rate stress reactivity has

been significantly associated with subjective assessments of children's and adults' IESR

levels ($r = .33$, $p < .01$; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman,

2000; Wolff et al., 2009). Also, evidence in the physiological stress reactivity literature has indicated that individuals who experience heightened levels of stress are vulnerable to developing exaggerated involuntary stress response patterns (Evans & Kim, 2007; Wolff et al., 2009). These individuals experience a damaging pattern in which chronic poverty-related stress sensitizes their stress reactivity systems, this hyperarousal results in poor self-regulatory skills, and these deficits lead to the development of internalizing and externalizing symptoms (Evans, 2003; Evans & Kim, 2007; Wolff et al., 2009). For example, an adolescent with an exaggerated involuntary response system is likely to experience more physiological arousal, emotional arousal, intrusive thoughts, and rumination when faced with psychosocial stressors, while adolescents without elevated levels of involuntary stress reactivity do not experience the same level of arousal when they encounter stress.

An individual's pattern of involuntary stress responses is widely conceptualized as a moderator of poverty-related stress's impact on mental health (Wadsworth & Berger, 2006; Wolff et al., 2009). Moderator variables are those that represent "preexisting characteristics that increase or decrease the likelihood that stressors will lead to psychopathology" (Grant et al., 2003, p. 453). Research suggests that people develop fairly stable and trait-like stress reactivity patterns by four years of age (Wolff et al., 2009). In fact, females as a group have been found to display higher levels of IESRs than males over the course of one year (Santiago et al., 2012). These early patterns of stress reactivity continue to impact people's lives in negative ways throughout development, and they make it difficult to cope with stressors such as growing up in poverty with

elevated levels of parent-child conflict (Evans, 2003; Evans & Kim, 2007; Repetti et al., 2002). Thus, as there is evidence for enduring individual differences in stress reactivity patterns, the related construct of IESR is a potential moderator of the impact of parent-child conflict on adolescents' mood (Wolff et al., 2009). For example, youth with low levels of IESRs may not be as impacted by conflict, while youth with high levels of IESRs are more emotionally and physiologically reactive to parent-child conflict, possibly contributing to worsening of daily mood.

It is important to examine processes like these in a precise way, because although adolescents' stress response patterns are stable, the amount and intensity of their exposure to stressors fluctuate from day to day. Single time point research designs or longitudinal designs that use singe ratings do not always capture a time when IESRs are activated; thus, it is important to use a research methodology that can access real world experiences across multiple days. Although research assessing involuntary stress reactivity using physiological measures often encompasses more than one day, this is for the purpose of establishing participants' average daily patterns of cortisol levels (e.g., Fairchild et al., 2008; Watamura, Donzella, Kertes, & Gunnar, 2004). This type of methodology does not assess day-to-day variations in youth's levels of involuntary stress reactivity. Further, based upon an extensive review of the research literature that uses self-report measures of stress reactivity and IESRs, it appears that no such research has collected repeated daily ratings, and certainly not across the course of one week. It is important that future research target this gap in our understanding of involuntary stress reactivity and its impact on youth's mental health in the context of key stressors.

Cultural Family Value as a Protective Factor for Low-Income Latino Adolescents

Fortunately, some Latino adolescents may be buffered against the harmful process of heightened IESRs exacerbating the impact of parent-child conflict on mood, due to the common cultural value of familism. Familism encompasses a strong identification with and attachment to one's family members (both nuclear and extended), a sense of solidarity and reciprocity among family members, and a central role of the family in one's own identity (Kuhlberg et al., 2010; Sabogal et al., 1987). Strong relationships among family members across generations and multiple locations are a cornerstone of Latino cultures (Smokowski et al., 2009). Research focusing on Latino individuals has historically recognized familism as one of the most important cultural values impacting on mental health (Marín & Marín, 1991; Moore & Cuéllar, 1970; Sabogal et al., 1987), and many studies have determined that familism is a buffer against the development of child mental health problems (Gil et al., 2000; Smokowski et al., 2010; Smokowski et al., 2009).

In addition to familism being associated with positive outcomes for children and adolescents, it is thought to be protective for low-income Latino youth through the impact it has on family processes. Familism buffers against negative outcomes for youth through the added benefit it lends to family relationships and family coping processes (Gamble & Modry-Mandell, 2008; Santiago & Wadsworth, 2011). In one study, adolescents from families high in familism coupled with more engagement in family coping strategies reported the fewest internalizing and externalizing symptoms compared to youth from families with a lower degree of familism (Santiago & Wadsworth, 2011). In a different

study, among the children who exhibited closeness and warmth in family relationships, it was those from families high in familism who exhibited the best emotional and peer adjustment (Gamble & Modry-Mandell, 2008). Therefore, familism is a key construct in examining Latino adolescents' mental health, and it has been identified as a moderator of the impact of family processes on youth adjustment.

Because adolescents with high familism adopt personal responsibility for the wellbeing of the family, they are likely to demonstrate lower levels of parent-child conflict as they strive to protect family harmony (Kuhlberg et al., 2010). However, during adolescence parent-child conflict is likely to increase for all youth due to the motivation for autonomy that accompanies adolescence (Kuhlberg et al., 2010). Thus, when Latino youth are struggling with these competing needs for autonomy and connectedness, the adolescents who possess high levels of the cultural value of familism may be protected against the harmful effects of parent-child conflict on mood problems (Kuhlberg et al., 2010; Peña et al., 2011). Adolescents who have high levels of familism may feel secure that their family relationships are intact despite experiencing parent-child conflict, while adolescents with low levels of familism may doubt whether they have the support of their family in the context of this conflict. Combined with the literature showing that familism moderates the effects of family processes, this lends support to the emergence of familism as a buffer against parent-child conflict such that for youth with high familism, their daily moods are not impacted as much by parent-child conflict, but for youth with low familism, higher levels of conflict lead to worse daily moods. Processes such as this are important to study, as researchers in the field have not fully determined how family

relationships protect youths from the harmful effects of conflict and have called for future

research to explore these associations (Crean, 2008).

In addition to familism serving as a buffer against the effects of parent-child

conflict on daily mood, it may also mitigate the impact of IESRs. This specific

moderation has not been examined in any published research; however, by synthesizing

the relevant literature on IESRs and familism, conclusions can be drawn about the nature

of this process. For adolescents who have high levels of familism, heightened IESRs may

not lead to the adverse outcome of lower daily moods (Gil et al., 2000; Smokowski et al.,

2010; Smokowski et al., 2009). For example, an adolescent with a high degree of IESRs

and familism would tend to respond to stress with elevated physiological arousal and

more intrusive thoughts or rumination, but this adolescent would also be secure in having

the support of family, and thus would be protected from mood problems (Gil et al., 2000;

Smokowski et al., 2010; Smokowski et al., 2009; Wolff et al., 2009). Alternatively, for

youth with low levels of familism, heightened stress reactivity may result in worse daily

moods, as their involuntary responses to stress will not be accompanied by the confidence

afforded to those who strongly identify with their families (Gil et al., 2000; Smokowski et

al., 2010; Smokowski et al., 2009; Wolff et al., 2009).

Synthesizing the literature reviewed here, it may also be that mood is impacted by

the interplay of parent-child conflict, involuntary stress reactivity, and familism together

(Gil et al., 2000; Smokowski et al., 2010; Smokowski et al., 2009). In this complex

vulnerability and protective process, low-income Latino adolescents' daily mood

outcomes may depend on their levels of all of these variables such that their moods are

protected against adverse effects unless they have a combination of high parent-child conflict, high IESRs, and low familism.

The Importance of Gender in These Processes

In order to examine low-income Latino adolescents' daily moods as they are impacted by parent-child conflict, IESRs, and familism, it is important to recognize the gender differences inherent in these processes. Regarding parent-child conflict, research has specifically examined the impact of this negative family process on Latina females and found that for adolescent Latinas, parent-child conflict has a large impact on self-esteem, internalizing behaviors, and suicide attempts (Kuhlberg et al., 2010). Although parent-child conflict is a key factor for all Latino adolescents, it is possible that it has a larger impact on Latina females, as they may have a stronger need to maintain family harmony than Latino males (Kuhlberg et al., 2010). Therefore, there may be an interactive effect in which, for females, high parent-child conflict has a greater impact on negative mood than for males.

Female adolescents also display higher rates of depression than males, and this finding is present for Latino adolescents as well (CDC, 2012; Zahn-Waxler, Shirtcliff, & Marceau, 2008). Further, studies examining moderators of the impact of stress on adolescents' internalizing symptoms have shown that in response to stress, girls are more likely to exhibit internalizing symptoms than boys (Grant et al., 2006). Thus, while it is clear that mood problems are of concern for both Latino boys and Latina girls, females may be especially vulnerable to experiences of negative mood, and this may especially be true in the context of high parent-child conflict.

Finally, gender plays a role in the experience of involuntary stress reactivity, as IESRs have been shown to be higher for females than for males (Santiago et al., 2012). Specifically, over the course of one year, it was found that females displayed significantly more IESRs than males (Santiago et al., 2012). Thus, there may be a main effect of gender on involuntary stress reactivity, such that girls' stress reactivity systems are more sensitive than boys' as a result of the environmental stressors they both face (Zahn-Waxler et al., 2008). Given this research establishing gender differences in several of the processes examined in the present study, this factor will be considered in all of this study's primary analyses where it is supported by previous research.

Limitations of Previous Research

The present study uses a daily diary methodology to examine parent-child conflict, stress reactivity, familism, and mood among low-income Latino middle school students. Although researchers have examined these constructs, there are important limitations to past research that this study addresses. First, while a fair amount of research has focused on the experiences of either Latino adolescents (e.g., Kuhlberg et al., 2010; Smokowski et al., 2007; Smokowski et al., 2009) or low-income adolescents (e.g., Santiago & Wadsworth, 2009; Wolff et al., 2009), a much smaller body of research has devoted resources to understanding the impact of these constructs on low-income Latino adolescents. This study focuses on the experiences of Latino adolescents attending a middle school serving a largely low-income population. Also, some studies neglect to examine the important impact of gender on these processes, and the present study will devote attention to these differences.

Second, the literature reviewed here comprises studies that incorporate some combination of the relevant variables, but none of these studies has integrated all of the effects of parent-child conflict, stress reactivity, and familism to predict mood. This gap in the research implies that these factors have not been studied in an integrative way for the low-income Latino adolescent population that is simultaneously most at risk for their detrimental effects and most able to benefit from the potential buffer of familism.

Finally, much of the research examining the effects of some combination of these constructs on the mental health of adolescents is cross-sectional (e.g., Kuhlberg et al., 2010; Smokowski et al., 2007) or longitudinal (e.g., Santiago & Wadsworth, 2009; Smokowski et al., 2009; Wolff et al., 2009) in nature. These research designs are able to answer some questions regarding the relationships among these influences on mental health; however, the daily diary methodology used in the present study is able to examine these processes in a more precise way. By measuring stress reactivity and mood on a daily basis over the span of one week, this research will provide a more nuanced understanding of adolescents' responses to stress and their impact on mood.

CHAPTER TWO

SPECIFIC AIMS AND HYPOTHESES

Specific Aim 1

The first aim of this study is to examine IESR as a vulnerability factor

contributing to worsened mood in the context of heightened parent-child conflict and to

examine familism as a protective factor that buffers against this process for low-income

Latino youth.

Hypothesis 1a

It is hypothesized that a two-way interaction will emerge in which for youth with

low daily levels of IESRs, heightened parent-child conflict will not result in worse daily

moods, but for youth with high daily levels of IESRs, heightened parent-child conflict

will result in worse daily moods (see Figure 1).

Figure 1. Hypothesized Interaction Between Parent-Child Conflict and Daily IESRs
Impacting Daily Mood
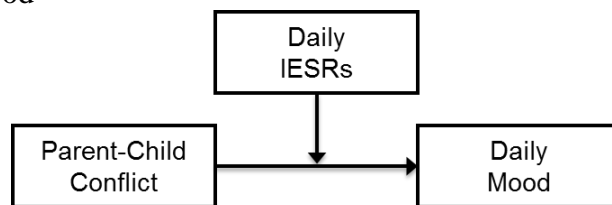
Hypothesis 1b

It is hypothesized that a two-way interaction will emerge in which for youth with

high levels of familism, heightened parent-child conflict will not result in worse daily

moods, but for youth with low levels of familism, heightened parent-child conflict will

result in worse daily moods (see Figure 2).

Figure 2. Hypothesized Interaction Between Parent-Child Conflict and Familism
Impacting Daily Mood

```
                    ┌─────────────┐
                    │  Familism   │
                    └──────┬──────┘
                           │
                           ▼
┌─────────────┐     ┌─────────────┐
│ Parent-Child│     │    Daily    │
│   Conflict  │───▶ │    Mood     │
└─────────────┘     └─────────────┘
```
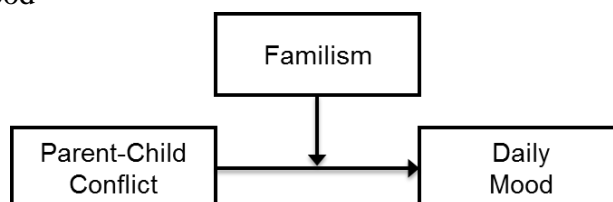
Hypothesis 1c

It is hypothesized that a two-way interaction will emerge in which for youth with

high levels of familism, heightened IESRs will not result in worse daily moods, but for

youth with low levels of familism, heightened IESRs will result in worse daily moods

(see Figure 3).

Figure 3. Hypothesized Interaction Between Daily IESRs and Familism Impacting Daily
Mood

```
                    ┌─────────────┐
                    │  Familism   │
                    └──────┬──────┘
                           │
                           ▼
┌─────────────┐     ┌─────────────┐
│    Daily    │     │    Daily    │
│    IESRs    │───▶ │    Mood     │
└─────────────┘     └─────────────┘
```
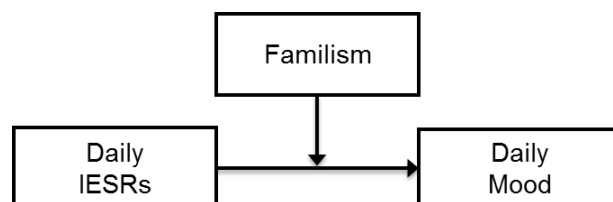
Hypothesis 1d

It is hypothesized that the association between parent-child conflict and daily

mood will depend on daily IESRs and familism. Thus, a three-way interaction will

emerge in which higher daily IESRs will exacerbate the influence of parent-child conflict

on daily mood, and higher familism will buffer against that poor outcome. Thus, youth

with high parent-child conflict, high IESRs, and low familism will demonstrate low daily

moods, while other youth will not suffer this outcome.

Specific Aim 2

The second aim of this study is to examine the effects of gender on the previously

outlined processes.

Hypothesis 2a

It is hypothesized that females will exhibit higher rates of low mood than males.

Hypothesis 2b

It is hypothesized that females will exhibit higher rates of IESRs than males.

Hypothesis 2c

It is hypothesized that females will exhibit more vulnerability to the impact of

parent-child conflict than males. Thus, a two-way interaction between parent-child

conflict and gender will emerge in which for females, greater parent-child conflict will

accompany worse moods across the week, while for males, this relation will not be as

strong (see Figure 4).

Figure 4. Hypothesized Interaction Between Parent-Child Conflict and Gender Impacting
Daily Mood
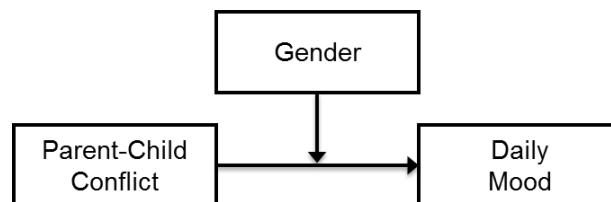
CHAPTER THREE

RESEARCH METHODS

This research was approved and conducted in compliance with the university's Institutional Review Board and the school district's research review committee.

Participants

Participants were recruited from a middle school that serves a low-income Latino population in Chicago, IL. All 68 of the school's 7th and 8th grade students were given a presentation on the research protocol and offered the opportunity to participate in the study. Out of these 68 students, 5 did not obtain parental consent, and 5 were absent on the day of the baseline assessment, yielding a final sample of 58 students (mean age = 13.31; 53% male). Statistics generated by the school indicate that 93% of their 7th and 8th grade students are eligible for free or reduced lunch. Ninety-five percent of participants identified as Latino, and 5% identified as mixed race/ethnicity (e.g., Latino and African American). Ninety-five percent of the students were U.S.-born, while 55% of students' mothers and 60% of students' fathers were born outside of the U.S.

Participants reported that 41 of them lived with a mother and father (or mother figure and father figure), 16 of them were living with a mother (or mother figure), and 1 of them was living with a father (or father figure). Fifty-seven percent of participants' mothers and 69% of fathers were working full-time, 17% of mothers and 17% of fathers were working part-time, and 24% of mothers and 10% of fathers were not working.

Of students' mothers, 20 did not finish high school, 20 obtained a high school diploma or GED, 1 obtained a training certificate, 9 attended some college but did not obtain a degree, 1 obtained an associate's degree, 2 obtained a college degree, 2 obtained a master's degree, 1 obtained a doctoral-level degree, and 1 was currently attending college or GED school (educational data missing for 1 mother). Of students' fathers, 23 did not finish high school, 19 obtained a high school diploma or GED, 2 obtained a training certificate, 9 attended some college but did not obtain a degree, 1 obtained a college degree, and 1 was currently attending college or GED school (educational data missing for 3 fathers).

Procedures

Each participant provided parental consent and child assent prior to the start of data collection. The students completed questionnaires that were administered by trained research staff over the course of eight consecutive days. On May 8th, 2013, all participants (100%) completed a set of baseline measures to assess demographic characteristics, family values, parent-child conflict, responses to stress, experiences of stress, and mood. Throughout the following week (ending on May 15th, 2013), participants completed seven daily records of the stressful events they experienced, their responses to these stressors, and their moods (daily diary completion rates ranged from 84% - 98% across the week). Researchers visited the school at the same time on each weekday of the study to administer and collect study materials, and on the weekend, participants completed the measures at home. Participants were given a $15 Target gift

card for completing the baseline measures and a $5 Target gift card for each daily diary they completed.

<div align="center">**Measures**</div>

Demographic Information

Participants reported demographic information as a part of the baseline survey, including gender, age, which parent(s) they live with, mother and father educational attainment and employment information, country of origin for self and parents, and race/ethnicity for self and parents.

Familism

Familism was measured at baseline using the Familism Scale (Gil et al., 2000), a 7-item measure that has been used with many Latino samples. Participants were asked to rate how true each statement was for his/her family on a scale from 1 (Not at all true) to 5 (Very much true). Items included statements such as "We are proud of our family" and "We share similar values and beliefs as a family." The Familism Scale items were derived by scholars in this area of specialty and were based on the work of David H. Olson and his colleagues (1983). Cronbach's alphas in the present sample were .87.

Parent-child Conflict

Conflict between each child and the parent(s) s/he lives with was measured at baseline using the short form of the Conflict Behavior Questionnaire (CBQ-20; Prinz, Foster, Kent, & O'Leary, 1979; Robin & Foster, 1989). This is a measure of perceived conflict and communication at home; thus, participants were first asked to write down the maternal figure and/or paternal figure they live at home with and complete the

questionnaire with those people in mind. The measure then instructs participants to "Think back over the last 2 weeks at home" and complete 20 true/false items such as "At least once a day we get angry at each other" and "We almost never seem to agree." The items are counterbalanced such that sometimes "true" corresponds to a negative perception, and sometimes "false" corresponds to a negative perception.

The original CBQ was created from an item pool generated by 8th grade students, practicing clinical psychologists, and research assistants; then it was refined in further studies (Prinz et al., 1979; Robin & Foster, 1989). The shorter form (CBQ-20) was developed using the items that maximally discriminated distressed from nondistressed families in a large sample that included adolescents, mothers, and fathers (Robin & Foster, 1989). The single score yielded by this short form has been found to correlate .96 or more with scores from the long form of the CBQ. Cronbach's alphas for conflict with mother in the present sample were .91, and for conflict with father, they were .87.

The sample for which mean scores are published in the CBQ manual comprises 205 distressed and nondistressed families pooled across 5 investigations (Karoly & Steffen, 1984; Robin & Foster, 1989). Recruitment was conducted in suburban and urban communities; distressed dyads were seeking outpatient treatment for relational problems, while nondistressed dyads responded to newspaper advertisements (Foster, Prinz, & O'Leary, 1983; Nayar, 1982; Prinz et al., 1979; Robin, 1981; Robin & Weiss, 1980). Distressed dyads were compensated for their study participation with free assessment and referral services, while nondistressed dyads were paid $8 (in 1979) for their participation (Prinz et al., 1979). The authors of this manual acknowledge that one limitation of the

normative data is that they were collected from a predominately lower-middle to upper-middle class White population; however, they also note that a study conducted with low-income Black adolescents found that scores obtained by those distressed and nondistressed youth were comparable to the published norms (Robin & Foster, 1989; Schubiner & Robin, 1990).

Involuntary Stress Reactivity

Stress reactivity was measured over the course of 7 consecutive days using an abbreviated version of the Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000). In each daily diary, participants were asked to report any stressful events that occurred during the past 24 hours; then, they indicated which of those events was the most stressful. On the daily abbreviated RSQ, participants indicated which responses to stress occurred in relation to the event that they identified as being the most stressful during the past 24 hours.

The original RSQ is comprised of 57 items assessing 5 styles of responding to stress (primary control coping, secondary control coping, disengagement coping, involuntary engagement, and involuntary disengagement). In order to maximize compliance with completion of the daily diaries, an abbreviated RSQ was used in the present study. This abbreviated RSQ contains 19 items, 5 of which assess involuntary stress reactivity with statements such as "When I have a problem like this, I feel it in my body" and "When I have problems like this, I can't stop thinking about what I did or said." Cronbach's alphas for daily assessments in the present sample ranged from .77 - .84.

Mood

Negative mood was measured over 7 consecutive days using the Positive and Negative Affect Schedule for Children (PANAS-C; Laurent et al., 1999). This measure asks participants to "Circle the number that best describes how often you have felt each of the following emotions during the past 24 hours" on a scale from 1 (Very slightly or not at all) to 5 (Extremely). The 15 items assessing negative affect include words such as "Sad" and "Gloomy." Cronbach's alphas for daily assessments in the present sample ranged from .90 - .95.

<div align="center">

Analytic Strategy

</div>

Preliminary Analyses

Preliminary analyses included plots of the data and evaluations of assumptions (i.e., skewness and kurtosis) to better understand the data and their limitations. Missing data procedures, such as data imputation, were considered. In addition, demographic variables such as age and immigration status were examined in relation to the primary variables of interest and considered for inclusion in the primary analyses. Descriptive statistics and correlations of key study variables were also examined.

Previous research on parent-child conflict has indicated that children growing up in poverty experience heightened levels of parent-child conflict (Evans & Kim, 2007; Evans & Kim, 2013; Santiago & Wadsworth, 2009; Wadsworth & Compas, 2002). In order to determine whether the sample of low-income Latino adolescents in the present study displays higher ratings of parent-child conflict than a normative sample, one-

sample *t*-tests were conducted in SPSS comparing the present sample to the normative

sample published in the CBQ-20 manual (Robin & Foster, 1989).

Previous research on mood has indicated that Latino youth exhibit greater

depressive symptoms than both White and African American children (CDC, 2012;

Twenge & Nolen-Hoeksema, 2002). In order to determine whether the sample of low-

income Latino adolescents in the present study displays worse mood ratings than a

normative sample, one-sample *t*-tests were conducted in SPSS comparing the present

sample to the sample assessed by Ebesutani, Okamura, Higa-McMillan, and Chorpita

(2011). In this research, 606 youths (mean age = 12.52; 52% female) enrolled in public

and private schools in O'ahu, Hawaii completed the PANAS-C. These adolescents'

ethnicities were Asian American (*n* = 314), Multiethnic (*n* = 250), White (*n* = 19), Pacific

Islander (*n* = 14), Latino/Hispanic (*n* = 2), and unknown (*n* = 7).

Primary Analyses

For all analyses in this study that included daily ratings of negative mood or

IESR, HLM was used, as the seven daily ratings of these constructs are nested within

each participant. HLM is an ideal analytic technique that accommodates hierarchical and

non-independent data structures. Further, for models with both dependent and

independent variables at Level 1, HLM capitalizes on the power associated with having

multiple data points for each participant when examining fixed effects. HLM was also

used for hypotheses that did not include independent variables at Level 1 in order to

maintain a consistent analytic technique throughout the study's primary analyses. HLM

as an analytic technique handles missing data at Level 1 (the level of daily ratings within

each participant) well, but when data are missing at Level 2 (the level of variables measured once at baseline), participants are deleted in a list-wise fashion. Therefore, each of the hypotheses in the present study was tested in separate HLMs before combining them into one large model for hypothesis 1d. Finally, it is expected that the impacts of the key variables in this study will be similar across participants, so the HLMs presented below examine fixed effects.

Hypothesis 1a

To test hypothesis 1a, that a two-way interaction between parent-child conflict and daily IESRs will emerge with daily moods as the outcome, a HLM was created in which mood was the Level 1 dependent variable (7 daily ratings for each participant), IESR was the Level 1 independent variable (7 daily ratings for each participant), and conflict was the Level 2 independent variable, allowing for the testing of the cross-level interaction between parent-child conflict and IESR (Preacher, Curran, & Bauer, 2006a). Following are these HLM equations:

Level 1: $(\text{Mood})_{ti} = \pi_{0i} + \pi_{1i}(\text{IESR})_{ti} + e_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(\text{Parent-Child Conflict})_i + r_{0i}$

$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Parent-Child Conflict})_i$

In order to clarify the meaning of this and all future HLM equations, following are descriptors for the notations in this equation:

$(\text{Mood})_{ti}$ = Mood for daily diary t nested within participant i

π_{0i} = Intercept for participant i

π_{1i} = Slope for participant i

$(IESR)_{ti}$ = IESR for daily diary t nested within participant i

e_{ti} = Random error associated with daily diary t nested within participant i

β_{00} = Overall mean intercept adjusted for Parent-Child Conflict

β_{01} = Regression coefficient associated with Parent-Child Conflict relative to Level 1 slope

$(Parent\text{-}Child\ Conflict)_i$ = Parent-Child Conflict for participant i

r_{0i} = Random effects of participant i adjusted for Parent-Child Conflict on the intercept

β_{10} = Overall mean intercept adjusted for Parent-Child Conflict

β_{11} = Regression coefficient associated with Parent-Child Conflict relative to Level 1 slope

Hypothesis 1b

To test hypothesis 1b, that a two-way interaction between parent-child conflict and familism will emerge with daily moods as the outcome, a HLM was created in which mood was the Level 1 dependent variable (7 daily ratings for each participant), and there were three Level 2 predictors (conflict, familism, and the interaction between conflict and familism; Preacher, Curran, & Bauer, 2006a). Following are these HLM equations:

Level 1: $(Mood)_{ti} = \pi_{0i} + e_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(Parent\text{-}Child\ Conflict)_i + \beta_{02}(Familism)_i + \beta_{03}(Parent\text{-}Child\ Conflict\ x\ Familism)_i + r_{0i}$

Hypothesis 1c

To test hypothesis 1c, that a two-way interaction between IESRs and familism will emerge with daily moods as the outcome, a HLM was created in which mood was

the Level 1 dependent variable (7 daily ratings for each participant), IESR was the Level 1 independent variable (7 daily ratings for each participant), and familism was the Level 2 independent variable, allowing for the testing of the cross-level interaction between familism and IESR (Preacher, Curran, & Bauer, 2006a). Following are these HLM equations:

Level 1: $(\text{Mood})_{ti} = \pi_{0i} + \pi_{1i}(\text{IESR})_{ti} + \text{e}_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(\text{Familism})_i + \text{r}_{0i}$

$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Familism})_i$

Hypothesis 1d

To test hypothesis 1d, that IESR is a vulnerability factor and familism is a protective factor in the relation between parent-child conflict and mood, HLM was used to model the cross-level interactions between IESR, familism, and conflict predicting mood ratings across the week (Preacher, Curran, & Bauer, 2006b). This HLM included three Level 2 independent variables (conflict, familism, and the interaction between conflict and familism) interacting with one Level 1 independent variable (7 daily ratings of IESR for each participant) to predict one Level 1 dependent variable (7 daily ratings of mood for each participant). This allowed for the testing of the cross-level interaction between parent-child conflict, familism, and IESR. Following are these HLM equations:

Level 1: $(\text{Mood})_{ti} = \pi_{0i} + \pi_{1i}(\text{IESR})_{ti} + \text{e}_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(\text{Parent-Child Conflict})_i + \beta_{02}(\text{Familism})_i +$
$\beta_{03}(\text{Parent-Child Conflict x Familism})_i + \text{r}_{0i}$

$\pi_{1i} = \beta_{10} + \beta_{11}(\text{Parent-Child Conflict})_i + \beta_{12}(\text{Familism})_i +$
$\beta_{13}(\text{Parent-Child Conflict x Familism})_i$

Hypothesis 2a

To test hypothesis 2a, that females will exhibit higher rates of low mood than males, a HLM was created in which mood was the Level 1 dependent variable (7 daily ratings for each participant), and gender was the Level 2 predictor. Following are these HLM equations:

Level 1: $(\text{Mood})_{ti} = \pi_{0i} + e_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(\text{Gender})_i + r_{0i}$

Hypothesis 2b

To test hypothesis 2b, that females will exhibit higher rates of IESRs than males, a HLM was created in which IESR was the Level 1 dependent variable (7 daily ratings for each participant), and gender was the Level 2 predictor. Following are these HLM equations:

Level 1: $(\text{IESR})_{ti} = \pi_{0i} + e_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(\text{Gender})_i + r_{0i}$

Hypothesis 2c

To test hypothesis 2c, that females will exhibit more vulnerability to the impact of parent-child conflict than males, a HLM was created in which mood was the Level 1 dependent variable (7 daily ratings for each participant), and there were three Level 2 predictors (conflict, gender, and the interaction between conflict and gender; Preacher, Curran, & Bauer, 2006a). Following are these HLM equations:

Level 1: $(\text{Mood})_{ti} = \pi_{0i} + e_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(\text{Parent-Child Conflict})_i + \beta_{02}(\text{Gender})_i + \beta_{03}(\text{Parent-Child Conflict x Gender})_i + r_{0i}$

Exploratory Analyses

To describe the participants' daily mood and stress reactivity ratings over the course of the week in a person-centered (rather than variable-centered) way, first, two profile analyses were conducted in SPSS. The flatness of each profile was determined along with their levels and their parallelism. Further, to explore the possible presence of distinct clusters of youth's IESR patterns, a cluster analysis was conducted in SPSS.

Finally, as clusters of youth with distinct patterns of IESR emerged, this study evaluated whether these cluster memberships impact youth's moods over the course of the week. To test this, hierarchical linear modeling (HLM) was used in order to capitalize on the amplified statistical power provided by seven daily measurements of mood. See above for additional rationale for use of HLM. In this HLM, mood was the Level 1 dependent variable (7 daily ratings for each participant), and cluster membership was the Level 2 independent variable. Following are these HLM equations:

Level 1: $(\text{Mood})_{ti} = \pi_{0i} + e_{ti}$

Level 2: $\pi_{0i} = \beta_{00} + \beta_{01}(\text{Cluster Membership})_i + r_{0i}$

CHAPTER FOUR

RESULTS

Preliminary Analyses

All independent and dependent variables were tested for skewness. Results

indicated that across respondents, reports of key study variables were not highly skewed.

Specifically, skewness values for baseline variables including familism and parent-child

conflict ranged from -0.41 to 0.95, while skewness values for daily diary variables

including daily ratings of negative mood and stress reactivity ranged from 0.22 to 2.07.

Thus, it was not necessary to perform variable transformations prior to conducting the

principal analyses.

All independent and dependent variables were also tested for kurtosis. Results

indicated that key study variables were not highly leptokurtic or platykurtic. Specifically,

kurtosis values for baseline variables including familism and parent-child conflict ranged

from -0.67 to 0.22, while kurtosis values for daily diary variables including daily ratings

of negative mood and IESR reactivity ranged from -1.06 to 5.46.

Descriptive, correlation, and *t*-test statistics for variables included in this study's

primary analyses can be found in Table 1. Preliminary analyses included an examination

of the degree of association between participant reports of conflict with mother and father

in order to determine whether these variables should be included in one parent-child

conflict composite or examined in separate analyses. Youth's reports of conflict with

mother and youth's reports of conflict with father were significantly and positively correlated, $r(50) = .45$, $p = .001$. That is, adolescents who reported more conflict in their relationship with their mother (or maternal figure living at home) also reported more conflict in their relationship with their father (or paternal figure living at home). This result represents a medium to large effect size as outlined by Cohen (1988). Thus, for participants who reported on levels of conflict with both a maternal and paternal figure (89.7% of the total sample; $n = 52$), adolescents' report of conflict with mother and father were averaged together to form a parent-child composite variable to be used in the primary analyses.

Table 1. Descriptive Statistics and Correlations for Study Variables

Variable	n	M	SD	1	2	3	4	5	6	7
1. Mother-Child Conflict	57	0.34	0.29	----						
2. Father-Child Conflict	53	0.27	0.24	0.45**	----					
3. Parent-Child Conflict Composite	52	0.30	0.22	0.88***	0.81***	----				
4. Familism	58	3.69	0.88	-0.53***	-0.11	-0.38**	----			
5. Daily Negative Mood Ratings	58	1.75	0.70	0.43**	0.27	0.38**	-0.24	----		
6. Daily IESR Ratings	58	2.26	0.70	0.33*	0.17	0.26	-0.17	0.68***	----	
7. Gender	58	----	----	-5.09***	-2.72**	-4.50***	1.75	-2.55*	-3.16**	----

Note. *$p < .05$. **$p < .01$. ***$p < .001$. For variables 1-6, values are rs. For variable 7, values are ts.

To determine whether demographic variables should be included as covariates in this study's primary analyses, a series of correlations and one-way ANOVAs were conducted testing for differences in parent-child conflict, familism, negative mood, and IESR based on age, number of parent(s) the youth lives with, mother's level of education, father's level of education, number of immigrant parent(s), child country of origin, and

child language use (English vs. Spanish) use. The only study variable that differed based

on a demographic trait was familism. Specifically, adolescents who lived with one parent

($M = 3.20$) had lower ratings of familism than adolescents who lived with two parents (M

$= 3.90$), $F(1, 56) = 8.55$, $p = .005$. Therefore, the number of parent(s) the youth lives with

variable was included as a covariate in the study's primary analyses that also included

familism, and these analyses were also run without this covariate. Results did not change

when the number of parent(s) the youth lives with variable was included in HLMs, except

in one case: for the large HLM testing all two-way and three-way interactive effects, the

addition of this covariate resulted in the main effect in which more daily IESRs were

associated with more daily negative mood was non-significant ($p = .456$). As this was the

only change in results, the findings are presented without this covariate included.

To determine whether the present sample of low-income Latino adolescents

reported higher parent-child conflict than a normative sample, one-sample t-tests

compared the present sample to the normative sample published in the CBQ-20 manual

(Robin & Foster, 1989). The CBQ-20 manual includes adolescent ratings of conflict with

both mother ($M = 2.0$) and father ($M = 1.6$). One-sample t-tests revealed that participants'

reports of conflict with both mother ($M = 6.81$), $t(56) = 6.35$, $p < .001$, and father ($M =$

5.42), $t(52) = 5.91$, $p < .001$, were significantly higher than those in a normative sample.

Two more one-sample t-tests were run to compare the present sample to the

"distressed" sample published in the CBQ-20 manual (Robin & Foster, 1989). This

manual provides "distressed" adolescent ratings of conflict with both mother ($M = 8.4$)

and father ($M = 7.6$) in addition to the normative sample. One-sample t-tests revealed that

participants' reports of conflict with both mother ($M = 6.81$), $t(56) = -2.11$, $p = .040$, and father ($M = 5.42$), $t(52) = -3.38$, $p = .001$, were significantly lower than those in a "distressed" sample.

Finally, two one-sample t-tests were run to compare the present sample to the normative sample assessed by Ebesutani et al. (2011). This study provided PANAS-C ratings of negative affect for a normative sample of 606 adolescents, including 315 girls ($M = 31.6$) and 245 boys ($M = 31.5$). One-sample t-tests revealed that female participants' reports of negative affect in the present sample ($M = 41.89$) were significantly higher than those in a normative sample, $t(26) = 3.30$, $p = .003$, while male participants' reports of negative affect in the present sample ($M = 29.90$) were not different from those in a normative sample, $t(30) = -.73$, $p = .474$.

Hypothesis 1a

In order to determine whether parent-child conflict and daily IESRs have an interactive effect on daily mood ratings, a HLM was conducted in which mood was the Level 1 dependent variable (7 daily ratings for each participant), IESR was the Level 1 independent variable (7 daily ratings for each participant), and conflict was the Level 2 independent variable. This HLM revealed a significant main effect in which more daily IESRs were associated with more daily negative mood ($p = .027$) and a significant parent-child conflict x IESR interaction associated with negative mood ($p < .001$; see Table 2). As hypothesized, for youth with low daily levels of IESR, heightened parent-child conflict did not result in worse daily moods, but for youth with high daily levels of IESR, heightened parent-child conflict did result in worse daily moods (see Figure 5).

Table 2. Hypothesis 1a Hierarchical Linear Model Results

	Coefficient	Standard error	t-ratio	d.f.	p value
Intercept	1.092	0.219	4.980	50	<0.001
Parent-Child Conflict	-0.916	0.537	-1.705	50	0.094
Daily IESR	0.190	0.086	2.218	274	0.027
Parent-Child Conflict x Daily IESR	0.722	0.187	3.860	274	<0.001

Note. The Level 1 outcome in this HLM was daily negative mood.

Figure 5. Hypothesis 1a Parent-Child Conflict × Daily IESR Interaction Associated with Daily Negative Mood

Hypothesis 1b
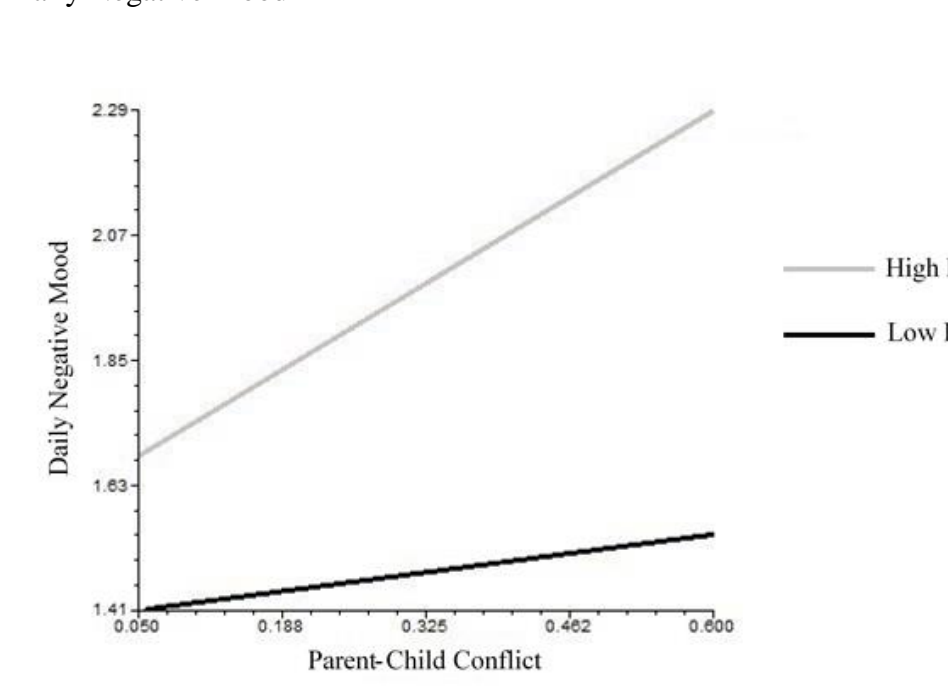
In order to determine whether parent-child conflict and familism interact to predict daily mood ratings, a HLM was conducted in which mood is the Level 1 outcome (7 daily ratings for each participant), and there were three Level 2 predictors (conflict, familism, and the interaction between conflict and familism). This HLM revealed a significant main effect in which more parent-child conflict predicted more daily negative mood ($p = .008$) and a significant parent-child conflict x familism interaction predicting negative mood ($p = .011$; see Table 3). This interaction included both predictors (and the interactive effect) at Level 2, requiring an online calculator of simple intercepts and simple slopes to interpret the interaction (Preacher et al., 2006a). Specifically, for youth with high levels of familism, heightened parent-child conflict did not impact daily moods ($t = .27, p = .79$), but for youth with low levels of familism, heightened parent-child conflict resulted in worse daily moods ($t = 3.74, p < .001$; see Figure 6).

Table 3. Hypothesis 1b Hierarchical Linear Model Results

	Coefficient	Standard error	t-ratio	d.f.	p value
Intercept	1.676	0.091	18.474	48	<0.001
Parent-Child Conflict	1.144	0.416	2.749	48	0.008
Familism	0.057	0.112	0.508	48	0.614
Parent-Child Conflict x Familism	-1.133	0.428	-2.648	48	0.011

Note. The Level 1 outcome in this HLM was daily negative mood.

Figure 6. Hypothesis 1b Familism × Parent-Child Conflict Interaction Predicting Daily Negative Mood
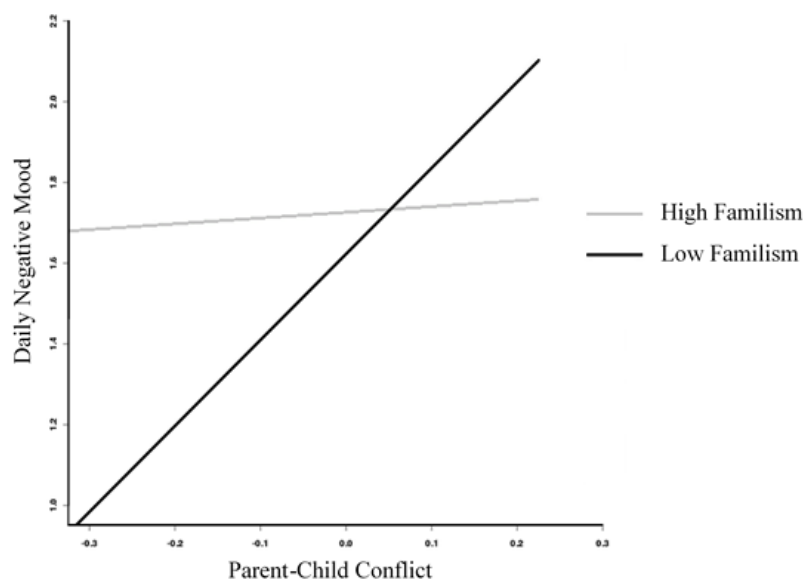
Hypothesis 1c

In order to determine whether IESRs and familism have an interactive effect on daily mood ratings, a HLM was conducted in which mood was the Level 1 dependent variable (7 daily ratings for each participant), IESR was the Level 1 independent variable (7 daily ratings for each participant), and familism was the Level 2 independent variable. This HLM revealed a significant main effect in which more daily IESRs were associated with more daily negative mood ($p < .001$) and a significant daily IESR x familism interaction associated with negative mood ($p = .025$; see Table 4). Specifically, for youth with high levels of familism, heightened daily IESRs did result in worse daily moods, but for youth with low levels of familism, heightened daily IESRs resulted in even worse daily moods (see Figure 7).

Table 4. Hypothesis 1c Hierarchical Linear Model Results

	Coefficient	Standard error	*t*-ratio	d.f.	*p* value
Intercept	0.184	0.550	0.335	56	0.739
Familism	0.135	0.141	0.955	56	0.344
Daily IESR	0.880	0.191	4.619	301	<0.001
Familism x Daily IESR	-0.111	0.049	-2.248	301	0.025

Note. The Level 1 outcome in this HLM was daily negative mood.

Figure 7. Hypothesis 1c Familism × Daily IESR Interaction Associated with Daily Negative Mood
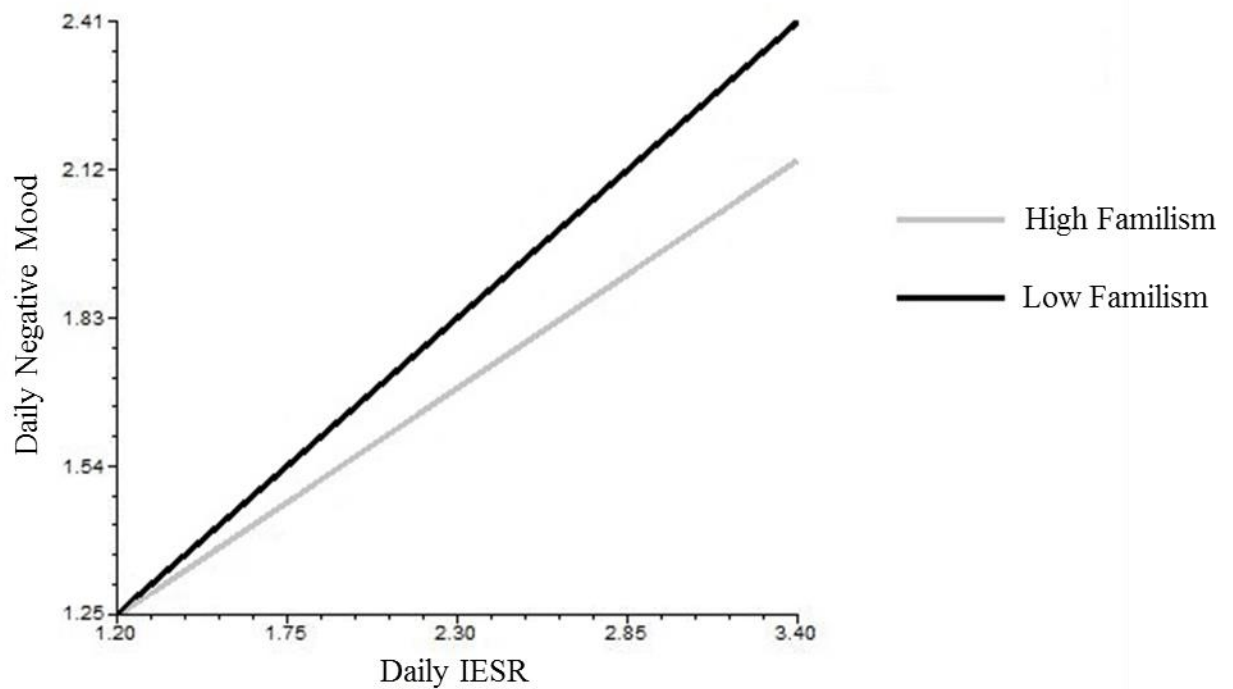
Hypothesis 1d

In order to determine whether IESR is a vulnerability factor and familism is a protective factor in the relation between parent-child conflict and mood, a HLM was conducted in which there were three Level 2 independent variables (conflict, familism, and the interaction between conflict and familism) interacting with one Level 1 independent variable (7 daily ratings of IESR for each participant) tied to one Level 1 dependent variable (7 daily ratings of mood for each participant). This HLM revealed a significant main effect in which more daily IESRs were associated with more daily negative mood ($p < .001$) and a significant parent-child conflict x IESR interaction associated with negative mood ($p < .001$; see Table 5). As hypothesized, for youth with low daily levels of IESRs, heightened parent-child conflict did not result in worse daily moods, but for youth with high daily levels of IESRs, heightened parent-child conflict did result in worse daily moods (see Figure 8). No other significant main or interactive effects were detected by this analysis.

Table 5. Hypothesis 1d Hierarchical Linear Model Results

	Coefficient	Standard error	*t*-ratio	d.f.	*p* value
Intercept	0.807	0.131	6.179	48	<0.001
Parent-Child Conflict	-1.064	0.581	-1.832	48	0.073
Familism	0.094	0.156	0.603	48	0.549
Parent-Child Conflict x Familism	0.451	0.742	0.608	48	0.546
Daily IESR	0.395	0.052	7.668	272	<0.001
Parent-Child Conflict x Daily IESR	0.740	0.206	3.600	272	<0.001
Familism x Daily IESR	-0.024	0.062	-0.379	272	0.705
Parent-Child Conflict x Familism x Daily IESR	-0.361	0.250	-1.448	272	0.149

Note. The Level 1 outcome in this HLM was daily negative mood.

Figure 8. Hypothesis 1d Parent-Child Conflict × Daily IESR Interaction Associated with Daily Negative Mood
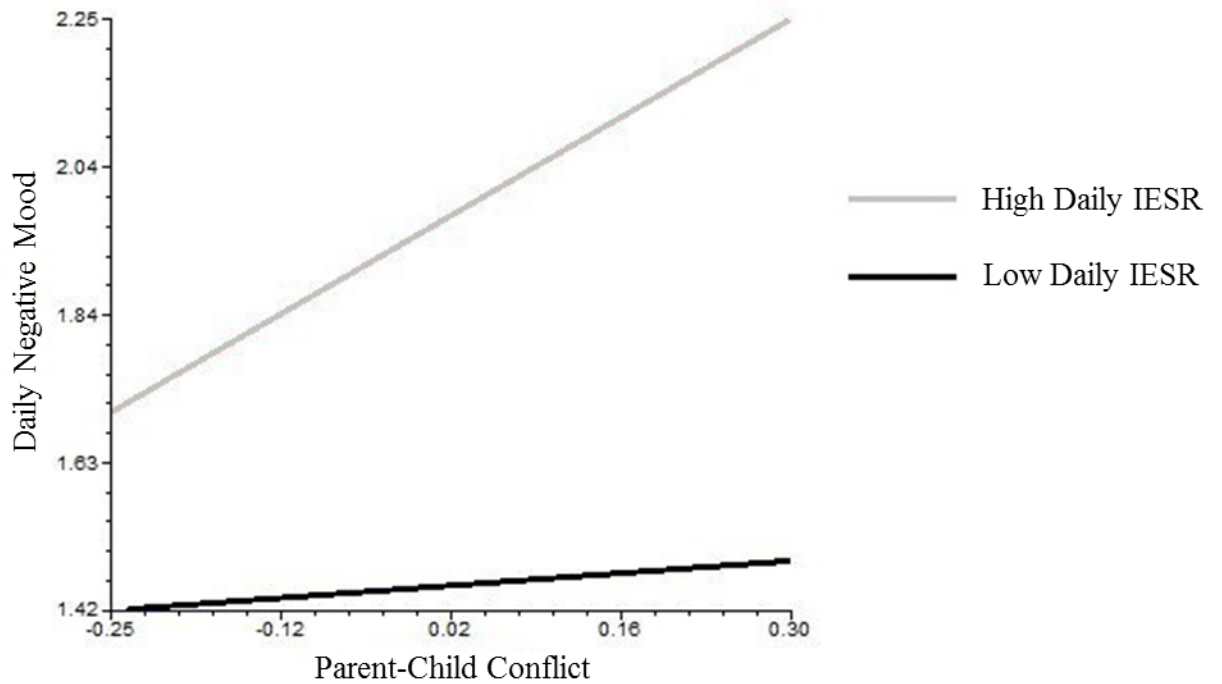

Hypothesis 2a

In order to determine whether females exhibited higher rates of low mood than males, a HLM was conducted in which mood was the Level 1 outcome (7 daily ratings for each participant), and gender was the Level 2 predictor. This HLM revealed a significant main effect in which females exhibited worse daily moods than males ($p = .013$; see Table 6).

Table 6. Hypothesis 2a Hierarchical Linear Model Results

	Coefficient	Standard error	t-ratio	d.f.	p value
Intercept	1.087	0.272	4.001	56	<0.001
Gender	0.450	0.175	2.567	56	0.013

Note. The Level 1 outcome in this HLM was daily negative mood.

Hypothesis 2b

In order to determine whether females exhibited higher rates of IESRs than males, a HLM was conducted in which IESR was the Level 1 outcome (7 daily ratings for each participant), and gender was the Level 2 predictor. This HLM revealed a significant main effect in which females exhibited more daily IESRs than males ($p = .003$; see Table 7).

Table 7. Hypothesis 2b Hierarchical Linear Model Results

	Coefficient	Standard error	t-ratio	d.f.	p value
Intercept	1.476	0.265	5.576	56	<0.001
Gender	0.534	0.171	3.127	56	0.003

Note. The Level 1 outcome in this HLM was daily IESR.

Hypothesis 2c

In order to determine whether females exhibited more vulnerability to the impact of parent-child conflict than males, a HLM was conducted in which mood was the Level 1 outcome (7 daily ratings for each participant), and there were three Level 2 predictors (conflict, gender, and the interaction between conflict and gender). This HLM contained no significant main or interactive effects (see Table 8).

Table 8. Hypothesis 2c Hierarchical Linear Model Results

	Coefficient	Standard error	*t*-ratio	d.f.	*p* value
Intercept	1.740	0.165	10.567	48	<0.001
Parent-Child Conflict	1.299	0.923	1.408	48	0.166
Gender	0.082	0.222	0.370	48	0.713
Parent-Child Conflict x Gender	-0.356	1.088	-0.327	48	0.745

Note. The Level 1 outcome in this HLM was daily negative mood.

Exploratory Analyses

To describe the participants' daily mood and stress reactivity ratings over the course of the week in a person-centered (rather than variable-centered) way, two profile analyses were conducted in SPSS. The profile analyses of daily negative mood ratings, $F(6, 31) = .77$, $p = .599$, and daily IESR ratings, $F(6, 28) = 1.44$, $p = .237$, revealed that there was not a significant difference across these ratings over the course of the week.

To explore the possible presence of distinct clusters of youth's IESR rating patterns, a Ward's method cluster analysis was conducted in SPSS. This type of cluster analysis is an agglomerative method, in that it begins by examining each participant in a separate cluster, and then these individual clusters are combined one-by-one based on the least possible increase in within-cluster variance at each step (Hair & Black, 2006). The Ward's method is advantageous in the present study with a small sample size, as it tends to produce clusters with similar group sizes. Only adolescents who reported their IESRs on all seven daily diaries were eligible for classification by the cluster analysis (58.6% of

the total sample; $n = 34$). Results demonstrated that eligible participants best fit into a

two-cluster organization, with Cluster 1 consistently demonstrating low ratings of IESR

($n = 22$; 64% male) and Cluster 2 demonstrating high ratings of IESR ($n = 12$; 83%

female). Patterns of daily IESR ratings for the two clusters are presented in Figure 9.

Figure 9. Daily IESR Ratings Separated by Cluster
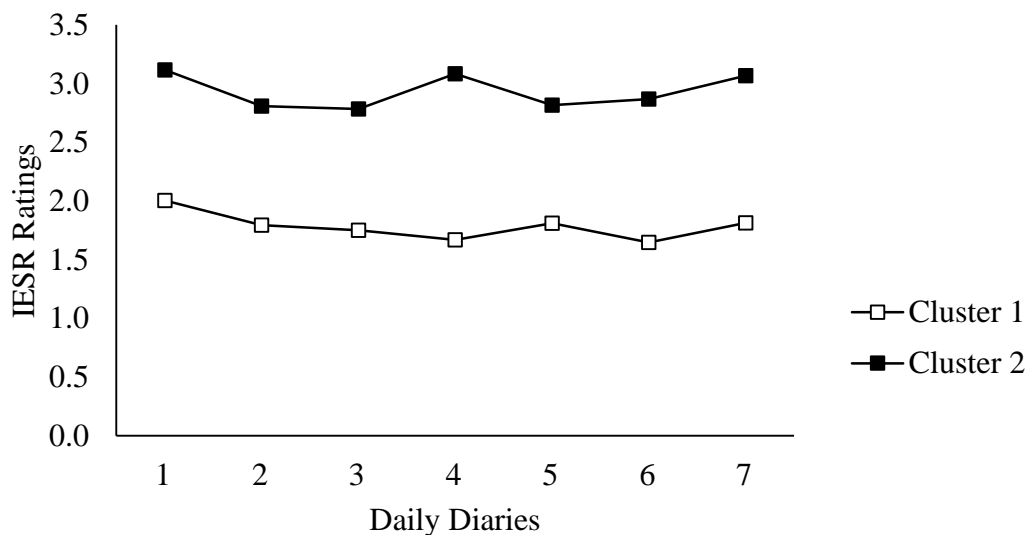
Next, in order to evaluate whether these cluster memberships impact youth's

moods over the course of the week, one hierarchical linear model was conducted with

negative mood as the Level 1 dependent variable and cluster membership as the Level 2

independent variable. Consistent with hypothesis 2, adolescents with distinct patterns of

IESR ratings displayed different levels of negative mood across the week, coefficient =

.86, $p < .001$. Specifically, youth in Cluster 1 (with low ratings of IESR) reported less

daily negative mood than youth in Cluster 2 (with high ratings of IESR).

CHAPTER FIVE

DISCUSSION

The present study had a number of findings regarding low-income Latino adolescents' daily moods as they are affected by parent-child conflict, daily IESRs, and familism. First, it was found that individual adolescents experience daily IESRs in distinct ways, and adolescents' experiences of involuntary stress reactivity are important, because they are strongly tied to their daily moods. The association between heightened daily stress reactivity and worse daily moods was one of the most robust findings in the present research. It was found that the negative impact of parent-child conflict on daily mood was only present when combined with high daily IESRs. Thus, involuntary stress reactivity is a risk factor for negative mood, and parent-child conflict is a vulnerability factor, exacerbating the negative impact of IESR on daily mood. However, this study also identified a protective factor that ameliorated some of these negative effects. Familism buffered the impact of conflict on mood. Familism was also protective in the context of daily IESRs, though it did not completely shield adolescents against the detrimental impact of involuntary stress reactivity. Finally, this research had gender-related results. It was found that females exhibited worse daily moods and more daily IESRs than males.

This study expands on previous research by using daily diary methodology to examine parent-child conflict, stress reactivity, familism, and mood among low-income Latino middle school students. These constructs are all highlighted in previous research

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literature as being impactful on the lives of low-income Latino youth (CDC, 2012; Evans & Kim, 2007; Gil et al., 2000; Kuhlberg et al., 2010; Santiago & Wadsworth, 2009; Smokowski et al., 2009; Smokowski et al., 2010; Twenge & Nolen-Hoeksema, 2002; Wadsworth & Compas, 2002; Wolff et al., 2009), yet they have not been integrated in a single study to identify their individual and interactive effects. Further, the present study includes gender analyses in order to build upon research showing that females are more vulnerable to the effects of conflict in the family than males, tend to display more IESRs than males, and have higher rates of depression than males (CDC, 2012; Kuhlberg et al., 2010; Santiago et al., 2012; Twenge & Nolen-Hoeksema, 2002). Finally, this research employs a daily diary method, which provides a set of data that is more representative of day-to-day life than either cross-sectional or longitudinal research designs. With these strengths, the present study was able to identify a number of findings relevant to the lives of low-income Latino adolescents.

Involuntary Stress Response Patterns and Daily Mood:

Exploratory Analyses and Hypothesis 1a

In the present study, one finding that was replicated across multiple models and both person-centered and variable-centered analyses was that involuntary stress responses are strongly associated with negative daily moods. The adolescents in this research were included in a person-centered cluster analysis that identified two groups of youth: one with consistently high ratings of IESR across the week and one with consistently low ratings of IESR across the week. As this was an exploratory analysis, no hypotheses were made regarding the existence or nature of clusters of IESR responders. However, it is

perhaps not surprising that roughly one third of the youth included in this analysis ($n = 12$) displayed heightened IESRs, while the majority of adolescents ($n = 22$) had lower ratings of involuntary stress reactivity. Further, HLM analysis revealed that membership in the group of youth who engaged in more involuntary stress reactivity across the week was tied to worse daily mood ratings during that time. This provides evidence for the link between IESR and negative mood in adolescents, especially low-income Latino youth.

This finding is further supported by the significant main effect of daily IESRs on daily negative moods consistent with hypothesis 1a. Specifically, it was found that adolescents' ratings of daily IESRs were tied to their daily ratings of negative mood. In fact, the main effect of daily IESR on daily mood remained significant in the larger model (for hypothesis 1d) testing all two-way and three-way interactions in the present study, indicating the strength of its impact on low-income Latino adolescents. This finding is consistent with both biological and psychological research establishing a link between physiological stress reactivity and mental health (Evans, 2003; Evans & Kim, 2007; Wolff et al., 2009). The results of the present study further enrich existing knowledge about the tie between stress reactivity and negative mood by establishing this link on a day-to-day scale within a low-income Latino adolescent population. A meta-analysis of past research revealed that involuntary stress reactivity is strongly associated with depression in children and adolescents (Lopez-Duran, Kovacs, & George, 2009), but this has never before been established using daily diary methodology for low-income Latino youth. The present study's results suggest that for this group, depressive disorders may develop for adolescents with high levels of daily stress reactivity, as their daily

moods were significantly worse. If this day-to-day process continues for these youth over time, their heightened stress reactivity may result in persistent negative moods consistent with a depressive disorder.

Given that previous research has established the association between stress reactivity and negative mood, and the present research has revealed that these detrimental processes are associated on a daily basis, it is important to educate adolescents about the negative impact of IESRs and engage them in skill-building programs that teach adaptive responses to stress. For example, past research has shown that secondary control coping (i.e., acceptance, cognitive restructuring, distraction, and positive thinking) is a response that buffers adolescents against the negative impacts of factors such as family conflict and poverty-related stress (Santiago & Wadsworth, 2009; Wadsworth, Raviv, Santiago, & Etter, 2011). Prevention programs targeting psychosocial wellness would be enhanced by including psychoeducation regarding stress reactivity, including what it is and how to recognize it, so that youth can increase their awareness about this harmful response to stress. Over time, this added awareness can help youth to notice when they are experiencing IESRs. Alongside this new awareness, youth must also be provided with alternative responses to stress to engage in when they notice their IESRs (e.g., secondary control coping; Santiago & Wadsworth, 2009; Wadsworth et al., 2011).

The Interactive Effect of IESR and Parent-Child Conflict on Daily Mood:

Hypothesis 1a

HLM analysis revealed that involuntary stress reactivity moderated the effect of parent-child conflict on the daily moods of low-income Latino adolescents. In this study,

the detrimental influence of parent-child conflict on mood depended on how much adolescents experienced IESRs throughout the week. Specifically, for youth with fewer daily IESRs, heightened parent-child conflict did not result in worse daily moods, but for youth with more daily IESRs, heightened parent-child conflict did result in worse daily moods. Within the large HLM (for hypothesis 1d) testing all of the hypotheses of the present study, this was the only interaction found to be significant. This finding highlights the strength of the exacerbating effect that parent-child conflict has on the harm caused by involuntary responses to stress.

The interactive effect between parent-child conflict and daily stress reactivity on daily negative mood adds to the conflict literature by clarifying the process by which this family-level factor impacts adolescents' moods. In the present study, low daily reports of stress reactivity buffered youth with high parent-child conflict against the outcome of negative daily moods, suggesting that, while impactful, parent-child conflict may not be a universal risk factor, but rather a vulnerability factor, which is more harmful in the context of another damaging factor. In past research, family conflict has been more strongly associated with adolescents' internalizing symptoms when accompanied by high poverty-related stress (Santiago & Wadsworth, 2009). In this research, when high parent-child conflict was accompanied by heightened stress reactivity, worse daily moods were observed. Thus, it may be that for low-income Latino youth, parent-child conflict only has a negative impact on day-to-day moods when accompanied by an impactful risk factor such as involuntary stress reactivity.

Physiological stress reactivity is a product of the HPA axis, which is sensitive to experiences of social threat and uncontrollability (Badanes et al., 2011; Repetti et al., 2002). Therefore, the particular combination of a chronically activated stress reactivity system and the social stressor of parent-child conflict may be particularly damaging for adolescents. On the other hand, youth who do not experience chronic physiological reactivity may be able to move past instances of parent-child conflict with relatively little impact on their daily moods. An individual's pattern of involuntary stress reactivity has been conceptualized as a moderator of environmental stress's impact on mental health in past research (Wadsworth & Berger, 2006; Wolff et al., 2009). Indeed, past research has shown that for individuals with dysregulated stress reactivity systems, experiences of stress such as interpersonal conflict have a more harmful impact on physical and mental health (McEwen & Tucker, 2011). Thus, when the youth in the present study with heightened reactivity to stress were confronted with parent-child conflict, they experienced negative mood outcomes, while youth with well-regulated physiological stress systems were protected against this outcome.

The damaging combination of stress reactivity and parent-child conflict increases youths' risk for developing depressive symptoms, further contributing to low-income Latino adolescents' disproportionate rates of depression (CDC, 2012; Twenge & Nolen-Hoeksema, 2002). Targeted interventions can combat this risk factor by educating youth about the impact of involuntary responses to stress and providing them with adaptive coping strategies (Santiago & Wadsworth, 2009; Wadsworth et al., 2011). For example, an adolescent who has learned to identify her IESRs can elect to engage in secondary

control coping instead, which she would not have been able to do without special knowledge of the nature of stress reactivity and more beneficial stress responses. Intervention targeting the reduction of IESRs and the enhancement of adaptive coping is particularly important, because research has shown that IESRs undermine adolescents' ability to engage in secondary control coping in the future (Santiago et al., 2012). Further, when IESRs are combined with poverty-related stress, it is even more difficult to practice secondary control coping in the future (Santiago et al., 2012). Thus, psychoeducational intervention programs targeting IESRs and adaptive coping can have a large impact on low-income Latino youth's ability to adapt to stress over time. Although adolescents may still experience parent-child conflict because of the nature of this developmental period, if they do not experience any accompanying physiological arousal, emotional arousal, intrusive thoughts, or rumination, their encounters with stress may not worsen their daily moods. Psychoeducation and prevention programs targeting stress reactivity could have a powerful impact on adolescents' daily moods, and perhaps, their long-term mental health as well.

The Impacts of Parent-Child Conflict and Familism on Daily Mood: Hypothesis 1b

In the HLM testing hypothesis 1b, participants' ratings of parent-child conflict predicted their daily negative mood ratings across the week. This finding is consistent with previous research stating that conflict within the family is one of the primary ways in which the context of poverty exerts its negative influence on adolescents' mental health (Evans & Kim, 2007; Evans & Kim, 2013; Santiago & Wadsworth, 2009; Wadsworth & Compas, 2002). This finding may exist in the research literature because

poverty creates a context of stress in which conflict is likely to occur, and parent-child conflict is a more proximal risk factor than the overarching context of poverty, so it has a direct impact on adolescents' mental health. Based on this significant main effect, parent-child conflict may be an important factor for low-income Latino adolescents. Given the negative impact that conflict can have on these youths' daily moods, it is important for clinicians and other providers to inquire about the level of conflict in the home and aid families in identifying adaptive communication styles (Kendall, 2012).

However, it is important to note that this main effect of parent-child conflict on negative mood was qualified by an interactive effect with familism. Specifically, for youth with high levels of familism, heightened parent-child conflict did not impact daily moods, but for youth with low levels of familism, heightened parent-child conflict resulted in worse daily moods. Thus, the cultural value of familism, which encompasses a strong identification with one's family members, a sense of solidarity among family members, and a central role of the family in one's own identity (Kuhlberg et al., 2010; Sabogal et al., 1987), buffered adolescents from the negative impact of parent-child conflict on mood. This finding is consistent with past research demonstrating the protective effect of familism against poor outcomes for Latino youth who espouse this value (Gil et al., 2000; Smokowski et al., 2010; Smokowski et al., 2009). This result is especially important for adolescents, as they are navigating a developmental period that includes a drive for autonomy that may bring increased parent-child conflict into the family (Kuhlberg et al., 2010). Although many adolescents may experience some parent-child conflict, those with high familism feel secure in the knowledge that their family

relationships are intact, while those with low familism may doubt whether they have the support of their family in the context of this conflict. Therefore, it is important for youth programming, middle schools, and mental health care providers to promote culturally relevant family cohesion for Latino youth.

The Interactive Effect of IESR and Familism on Daily Mood: Hypothesis 1c

The present study also examined the impacts of involuntary stress reactivity and familism together in a HLM. It was again found that more daily IESRs were associated with more daily negative moods. In addition, an interactive effect between stress reactivity and familism was associated with daily mood. Specifically, for youth with high levels of familism, heightened daily IESRs did result in worse daily moods, but for youth with low levels of familism, heightened daily IESRs resulted in even worse daily moods. Therefore, familism did not completely buffer against the negative impact of involuntary stress reactivity on daily mood, but it mitigated the damaging effect of IESRs. This finding is novel in the research literature, as no other study has examined the interactive effect of stress reactivity and familism on mood. This interaction of risk and protective factors is especially relevant for low-income Latino youth, as they may be especially able to rely on the strength of their family despite experiencing physiological and emotional arousal (Gil et al., 2000; Smokowski et al., 2010; Smokowski et al., 2009; Wolff et al., 2009). It is important for the systems providing for these adolescents to be aware of the beneficial impact of familism when caring for youth who tend to experience involuntary stress responses. These adolescents are likely to face negative mood outcomes, but this can be mitigated if the cultural value of familism is strengthened.

However, familism was not found to completely protect adolescents against negative mood outcomes, so it is possible that this cultural family-level factor is not sufficient to buffer against the pervasive detrimental effect of involuntary stress responses. It may be that a more proximal individual-level buffer is needed to counteract the tie between IESRs and negative moods. This could be achieved through targeted interventions providing adolescents with psychoeducation regarding the nature of stress reactivity and ways to combat it. More adaptive responses to stress may include strategies such as secondary control coping (i.e., acceptance, cognitive restructuring, distraction, and positive thinking) or cognitive-behavioral interventions such as relaxation techniques and cognitive restructuring (Kendall, 2012; Santiago & Wadsworth, 2009; Wadsworth et al., 2011).

The Impacts of Parent-Child Conflict, IESR, and Familism on Daily Mood:

Hypothesis 1d

The present study combined all of the previously discussed two-way interactions into one large HLM, which also tested for a possible three-way interaction among parent-child conflict, daily IESRs, and familism associated with daily mood. In this comprehensive model, a significant main effect was detected in which high daily IESRs were associated with worse daily negative moods. Further, a significant parent-child conflict x IESR interaction was detected in which parent-child conflict exacerbated the negative impact of daily stress reactivity on daily moods. In this model, no significant two-way interactions were found between parent-child conflict and familism or between IESRs and familism, and no three-way interaction emerged.

The disappearance of two out of three two-way interactions in this larger HLM may have been caused by insufficient power to detect their effects, or it may be that these interactive effects do not have a significant impact on low-income Latino youth within the context of the more impactful parent-child conflict x IESR interaction. The lack of a significant three-way interaction may have been caused by a lack of statistical power as well, or it may be that parent-child conflict, daily IESRs, and familism do not all interact to predict low-income Latino youth's daily moods. It was hypothesized that in this three-way interaction, adolescents would be protected against negative daily moods unless they experienced a combination of high parent-child conflict, high daily IESRs, and low familism. It appears that this is not the way daily moods function for low-income Latino adolescents, as there were negative mood outcomes for youth in scenarios other than the one modeled by this three-way interaction hypothesis. When the adolescents in this study were exposed to any combination of two vulnerability factors in the present study, they experienced negative daily moods. This increased number of scenarios in which low-income Latino youth may experience negative daily moods helps to explain the disproportionate rates of depression for this group (CDC, 2012; Twenge & Nolen-Hoeksema, 2002). It is therefore crucial that these adolescents are provided with well-designed psychoeducation, prevention, and intervention programs targeting the impacts of parent-child conflict, involuntary stress reactivity, and familism on mood.

The Impact of Gender for Low-Income Latino Adolescents:

Hypothesis 2a, Hypothesis 2b, and Hypothesis 2c

As found in previous research (CDC, 2012; Santiago et al., 2012; Twenge & Nolen-Hoeksema, 2002), the present study demonstrated that females displayed higher rates of mood problems and involuntary stress reactivity than males. These gender differences in involuntary stress reactivity and negative mood are likely caused by the interplay between biological and environmental factors. For example, boys and girls may have different biological processes that interact with environmental factors and may also face distinct environmental risk factors (Zahn-Waxler et al., 2008). Specifically, many gender differences in rates of psychopathology have been attributed to differences between females' and males' neurological development that begin in utero, when sex hormones such as testosterone impact the structure and functioning of males' and females' brains differentially (Lenroot & Giedd, 2010). These biological differences increase during puberty, when hormones such as testosterone and estrogen widen the gender gap between females' and males' brains and bodies, including enhanced HPA axis activity for females (Zahn-Waxler et al., 2008). Estrogen and progesterone have some beneficial effects on girls' stress response systems, but they also impede the ability to recover quickly from stress within the stress reactivity response. Thus, girls may be more susceptible to both IESRs and negative moods as a result of these biological differences (Zahn-Waxler et al., 2008).

There are also environmental risk factors for heightened stress reactivity and depression that are more impactful for girls than for boys. For example, the "gender-

intensification hypothesis" states that during puberty, girls feel increased pressure to conform to a culture-driven feminine ideal that is dependent, passive, and self-sacrificing, thereby causing the low self-worth that is implicated in depression (Zahn-Waxler et al., 2008). Another possible reason for females' higher rates of depression is that gender socialization enhances girls' need for social affiliation, so increased interpersonal stressors during adolescence introduce higher strain for females (Kuhlberg et al., 2010; Zahn-Waxler et al., 2008). Further, research has shown that in response to stress, girls are more likely to exhibit internalizing symptoms than boys, so the rapid changes occurring during adolescence may lead to more female depression (Grant et al., 2006; Kuhlberg et al., 2010; Zahn-Waxler et al., 2008). There are some mental health problems that occur more in males than females early in life, but for stress reactivity and depression, girls have a profile of organic and experiential risk factors that are more likely to precede these negative outcomes.

Past research has also found that females tend to be more susceptible to the negative influence of parent-child conflict than males (Kuhlberg et al., 2010); however, this was not found in the present study. This may be due to small sample size resulting in Type II error, as no main effect of gender or of parent-child conflict was present in the HLM (for hypothesis 2c) testing for an interaction between gender and conflict. It is also possible that for adolescents in the present study, negative daily mood was influenced by daily IESRs far more than gender or parent-child conflict, such that gender and conflict failed to be associated with daily mood in the hypothesis 2c HLM. In fact, the correlation between IESRs and negative mood was quite strong ($r(56) = .68$, $p < .001$), so this may

account for the lack of significant mood findings related to other factors. Future research should continue to explore whether parent-child conflict is more impactful for female Latinas than for Latino males.

Summary of Primary Findings

In this study, it was found that on a day-to-day scale, involuntary stress reactivity is strongly tied to negative moods. Thus, youth with sensitized physiological stress systems are at risk for mental health problems such as depressive disorders. Further, daily stress reactivity impacted daily mood through its interactions with other factors. For example, heightened parent-child conflict resulted in worse daily moods, but only for youth who reported more daily IESRs. Also, for youth with high levels of familism, heightened daily IESRs did result in worse daily moods, but for youth with low levels of familism, heightened daily IESRs resulted in even worse daily moods. This finding indicates that, while helpful, familism cannot completely buffer the impact of elevated stress reactivity among low-income Latino adolescents. However, this study also found that for youth with high levels of familism, heightened parent-child conflict did not impact daily moods. Therefore, the cultural value of familism may be protective against parent-child conflict's impact on negative mood. Overall, involuntary stress reactivity was found to be a very impactful risk factor for low-income Latino adolescents. Parent-child conflict was also harmful, but mostly when in combination with another detrimental factor. Finally, familism was able to buffer adolescents against some negative mood outcomes, but not when accompanied by heightened stress reactivity.

Limitations of the Present Study

This research may have been underpowered to detect higher-order effects (i.e., three-way interactive effects) and other influences due to the small sample size of the study ($N = 58$). Although several important findings were detected for this group of low-income Latino youth, future research should attempt to examine the potential for a three-way interaction among parent-child conflict, IESR, and familism predicting negative mood. Also, some of the HLMs in the present study examined the effects of Level 2 variables on a Level 1 outcome and did not benefit from the added power afforded by multilevel modeling when a Level 1 independent variable is included. Therefore, the interactive effects of parent-child conflict x familism and parent-child conflict x gender should be examined in future research, as the present study may have been underpowered to detect their effects.

Further, the daily diary methodology of this study was able to focus on the day-to-day experience of adolescents. However, the analyses conducted in this study did not include examinations of causality. It is possible to test causality using HLM (Duckworth, Tsukayama, & May, 2010), but the present study did not include time-lagged predictor and outcome variables. Future research combining daily diary methodology with time-lagged predictor and outcome variables in HLM would be well-poised to draw conclusions about the causal impacts of parent-child conflict, IESR, and familism on daily mood.

The present study also suffered from a lack of multiple data points regarding parent-child conflict. The other factors measured at baseline (i.e., familism and gender)

are not as likely to shift over the course of one week, but it is possible that parent-child conflict fluctuated day-to-day. The design of this research prevented an examination of these variations, which may limit the scope of the conclusions that can be drawn from these findings.

In addition, all of the factors examined in the present study were measured by a single method and modality (i.e., self-report questionnaire). This research design has the weakness of all of the biases inherent in self-report data (e.g., social desirability, demand characteristics, memory limitations, etc.) and also increases the multicollinearity of the data in the present analyses. If one or more of the key variables in the study was examined through other means (e.g., observational parent-child conflict data, physiological stress reactivity levels, parent-report of familism, etc.), this would strengthen the validity of the research and potentially enhance its ability to detect significant effects.

Finally, although it was the intent of the present study to focus on the experiences of low-income Latino adolescents, the specificity of this population may limit the generalizability of these results to other groups. However, the *t*-tests comparing the present sample to normative data published for parent-child conflict and negative mood indicate that the adolescents who participated in this research are experiencing more negative outcomes than a normative sample but less than a clinically distressed sample. This indicates that the primary findings of this study may be generalizable to other low-income Latino youth in the general U.S. population.

Implications of the Present Study

Despite this study's limitations, it has important implications for the mental health of low-income Latino adolescents. These youth are particularly susceptible to negative mental health outcomes given the damaging stress associated with economic strain, acculturation, discrimination, family conflict and change, and exposure to violence and victimization (Romero & Roberts, 2003; Santiago & Wadsworth, 2011; Thoman & Suris, 2004). Also, the relationship between exposure to poverty and negative mental health outcomes is intensified for ethnic minority youth (McLeod & Owens, 2004; Stein et al., 2012). Therefore, the present study focuses on a group of adolescents who are at increased risk for negative mental health outcomes.

Given the particular processes examined, the results of this study can inform theory regarding mood outcomes for youth as well as interventions that target key constructs such as parent-child conflict and involuntary stress reactivity while capitalizing on the strength of cultural values such as familism. For example, it appears that daily stress reactivity is strongly tied to daily negative moods, and this may be a key process through which low-income Latino adolescents develop depressive disorders. Thus, there is a need for interventions to target stress reactivity through psychoeducation, training on recognizing involuntary stress responses, and skill-building regarding adaptive responses to stress (e.g., secondary control coping, relaxation techniques, and cognitive restructuring; Kendall, 2012; Santiago & Wadsworth, 2009; Wadsworth et al., 2011).

The findings of the present study demonstrate the importance of educating youth about the negative impacts of daily IESRs on daily moods (especially alongside high parent-child conflict or low familism). Involuntary stress reactivity had a pervasive negative impact on youth in the present study, and mental health providers can teach adolescents to recognize their physiological responses to stress, emotional arousal, intrusive thoughts, and rumination. Then, they can teach adolescents to engage in adaptive forms of coping when they notice their IESRs. Carefully constructed mental health programs have the opportunity to help adolescents understand and identify their own responses to stress, which will enable them to engage in more adaptive coping (Santiago & Wadsworth, 2009; Wadsworth et al., 2011). These may include primary control coping (i.e., problem solving, emotional expression, emotional regulation), secondary control coping (i.e., acceptance, cognitive restructuring, distraction, positive thinking), or cognitive-behavioral interventions such as relaxation techniques or cognitive restructuring (Kendall, 2012; Wadsworth et al., 2011). By engaging in these adaptive responses to stress, adolescents may be able to decrease their levels of arousal in the moment and also increase their confidence regarding their ability to cope with stress in the future, thereby decreasing the likelihood that they will experience heightened stress reactivity.

Further, low-income Latino youth may be able to benefit from the buffering effect of familism. This cultural value was found to protect adolescents against negative daily moods in the context of high parent-child conflict, and it partially mitigated the harmful effect of heightened daily IESRs. Adolescents with high familism may be able to rely on

the strength of their family relationships even when confronted with high levels of stress, while youth with low familism cannot count on this same assurance. Programs for Latino adolescents should incorporate this cultural family cohesion into their goals for youth, as it appears to be a particular strength for these adolescents, even in the presence of risks.

Finally, the present study replicated previous findings (CDC, 2012; Santiago et al., 2012; Twenge & Nolen-Hoeksema, 2002; Zahn-Waxler et al., 2008) indicating that female adolescents display higher rates of mood problems and involuntary stress reactivity than males. This result highlights the importance of targeting the mental health of girls during childhood and adolescence, as they are at greater risk for developing psychological disorders. It is crucial that the knowledge gained through research such as the present study is made useful in psychoeducation, prevention, and intervention programs for low-income Latino youth.

Based on these results, it will be helpful to devote future research efforts to and provide funding for programs on the factors of involuntary stress reactivity, parent-child conflict, and familism. Each of these factors were found to have an impact on the daily moods of low-income Latino adolescents in the present study, and it is important for those working with these youth to be aware of these key factors and their contributions to mental health outcomes. Future research should also address the limitations of this study by recruiting a larger sample to test higher-order interactive effects, including multiple methods of assessment (i.e., observational, parent-report, and physiological), and conducting causal analyses using time-lagged predictor and outcome variables in HLM. There is strong research being conducted to examine gender differences in cortisol

reactivity (measured after a standard interpersonal stressor task) leading to internalizing symptoms (e.g., Natsuaki et al., 2009). Studies such as these can be enriched by placing biological stress reactivity processes in the context of the real-life interpersonal vulnerability and protective factors impacting the daily lives of adolescents (e.g., parent-child conflict and familism). By taking this integrative developmental psychopathology perspective, accurate models of risk and resilience can be developed, and these targets for intervention can inspire developmentally- and culturally-appropriate prevention and intervention programs.

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VITA

Stephanie Brewer is a doctoral student at Loyola University Chicago studying clinical psychology with a specialization in children and families. She received her B.A. in Psychology and Spanish from Washington University in St. Louis in 2010. During her time in college, Ms. Brewer participated in numerous research projects culminating in presentations at local conferences. She also received a summer research grant, which allowed her to design and conduct independent research during the summer leading up to her senior year. Ms. Brewer completed a senior honors thesis examining college students' attitudes toward relationships and marriage and graduated magna cum laude. Since starting graduate school at Loyola, Ms. Brewer has been a member of Dr. Catherine DeCarlo Santiago's Children Adapting to Stress and Adversity (CASA) Lab. As part of this lab, Ms. Brewer has worked on multiple research projects that coincide with her interests. These have included a daily diary study examining stress, coping, and mood among low-income Latino middle school students; a study examining the impact of the Bounce Back group intervention for children in kindergarten through 3rd grade with posttraumatic stress disorder; and a longitudinal study examining the role of family coping in protecting children against stressors associated with immigration among low-income Mexican-origin families. Her master's thesis examined low-income Latino adolescents' daily moods as they are affected by family environment and stress reactivity.

Ms. Brewer's work on these research projects has resulted in numerous conference

presentations, as well as several publications that are in preparation or under review.