

**YOUNG MOTHERS' EARLY ETHNIC-RACIAL SOCIALIZATION
AND CHILDREN'S SCHOOL READINESS**

A dissertation

submitted by

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Abstract

Conceptual frameworks concerned with the development of ethnic-minority children illustrate how families form an adaptive culture in which parents socialize their children to healthfully respond to daily experiences as a minority in a socially stratified society. A central feature of this socialization is ethnic-racial socialization, which comprises the behaviors and strategies parents employ to provide children messages regarding culture, ethnicity, race, and social stratification. Over the past three decades, the specific links between these strategies and child academic and social adjustment have received much attention in empirical studies of adolescents, while only a small number of studies have been conducted on processes with young children. Those few that have been conducted reveal that certain dimensions of ethnic-racial socialization serve as important protective factors for young children's socio-emotional and cognitive health.

Thus the present study sought to expand upon prior research by examining in a diverse sample of young mothers ($N = 468$), the extent to which mothers' *early* ethnic-racial socialization behaviors may be adaptive in promoting the school readiness competencies of their young children. Using data from the Massachusetts Healthy Families Evaluation Early Childhood study, I conducted two studies to address issues of measuring this phenomenon in a novel sample of young mothers and examine predictive associations among early ethnic-racial socialization, socio-cultural features of families, and children's school readiness.

Findings validated two prominent dimensions of ethnic-racial socialization—cultural socialization and preparation for bias—as relevant features of young mothers' parenting. Findings also suggest that ethnic-racial socialization is intricately tied to family ecology in early childhood; for example, whereas both ethnic minority and European-American young mothers engaged in these behaviors in similar ways, findings also indicated that a marginalized social experience was positively associated with both behavioral dimensions. Furthermore, messages intended to instill pride in one's heritage culture were optimally associated with children's competencies, whereas messages that prepare children for bias appeared to be maladaptive; suggesting that in early childhood preparation for bias messages may be developmentally inappropriate while cultural socialization messages may bolster the self-system. Contributions alongside study limitations are discussed in terms of conceptual, empirical, and program relevance.

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For seven years now I have noted and regarded a message thumbtacked to the wall of my advisor's office. The note, a sentimental offering from her former student, references the neo-Platonist and Newtonian notion that we may achieve greatness because we stand on the shoulders of giants. I would like to suggest the humility of this notion is important to honor here as I complete my dissertation and doctoral program.

In complete contrast to her diminutive build, my advisor and mentor, Jayanthi Mistry, is my consummate giant. As a thinker, a conceptual scholar, a teacher, a navigator and negotiator, a mother, a woman, a first generation immigrant, (and a ballet fiend, among many other roles); Jayanthi has always provided a critically relevant and humane perspective in my development as a scholar. She has always—ALWAYS—championed my path. Thank you, Jayanthi.

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CHAPTER ONE

INTRODUCTION

Understanding developmental features and processes that are normative and adaptive for ethnic/racial minorities and other underrepresented families in the United States is critical to informing the diverse ways in which children mature and develop competence. However, conventional conceptual frameworks for child socialization processes in the developmental literature do not sufficiently take into account that child socialization is both situated in a socio-cultural context and enacted upon through interpretation of socially-situated schemas of meaning (Mistry & Wu, 2010). Scholars concerned with the development of ethnic minority children emphasize that in the U.S. a family's social position is fundamentally important to understanding family processes; and further that the daily lived experience of being an ethnic minority and parenting as an ethnic minority is central to understanding the normative and adaptive family processes of families not represented in conventional frameworks (García Coll et al, 1996). For instance, marginalization is a normative, if not hallmark, experience for ethnic minority families; and as such, it is consistent that socialization addresses this experience (Mistry, Contreras, & Pufall-Jones, 2014).

The substantive focus of this dissertation study is the phenomenon of ethnic-racial socialization. Examining ethnic-racial socialization may be effective in understanding diverse family processes because it represents the strategies and behaviors parents employ, in part, to respond to the challenge of marginalization: it is the dynamic process by which parents provide messages to their children

regarding culture, ethnicity, race, and social stratification (Hughes et al., 2006b). Ethnicity and race, as constructs, are intricately tied to one another and experienced in complex ways in daily life (García Coll et al, 1996; Schwartz et al., 2014). However, for the purposes of the present study, ethnicity and race may be considered in light of the definitions provided by García Coll and colleagues.: *ethnicity* as a means to “convey cultural distinctness deriving mostly from national origin, language, religion, or a combination thereof...that is subject to change over time” (p. 1898) and *race* as “a way of classifying individuals and groups in the context of daily living, usually on the basis of externally visible characteristics...that...implicitly or explicitly attributes an inferior/superior social position to the group or individual” (p. 1897).

Scholars have characterized ethnic-racial socialization practices as both intentional and unintentional, as well as varied in the thematic content (Hughes et al., 2006b; Lesane-Brown, 2006). Parents across multiple ethnic groups have consistently indicated in empirical studies that they engage in behaviors to cultivate pride in their children regarding their ethnic/racial heritage: scholars have posited that by providing cultural experiences and knowledge for children, this pride that parents promote may scaffold a more global and positive aspect of self-esteem. Parents have also indicated that they provide messages and warnings to their children about how to survive in a society in which marginalization, discrimination, and prejudice permeate daily life. Themes, or strategies, here have included preparing children for bias in their experiences and/or promoting a sense of mistrust of others who belonged to groups that historically discriminate against

minority groups. Research has suggested these strategies may provide a base for both global and situational awareness of relative racialized social position, as well as highlight for children more negative aspects of life as an ethnic/racial minority in the U.S. (Hughes et al., 2006b).

Family processes and environments of early childhood are the formative contexts of socialization. Early childhood represents a unique period in which the cognitive and social-communicative proclivities of typically developing children rapidly “ramp up” as children become more active and cognizant in their social lives. Concurrently, this is also a period in which stereotypes or classifications along social divisions are not yet established in children’s social cognizance (Quintana, 1998). Young children spend the greatest amount of time at home and with caregivers who are truly the primary source of social influence (whereas later in middle childhood and adolescence there are multiple sources who contribute to socialization, e.g., siblings, peers, teachers, and mentors). Parents persist in their role as socialization agents by exposing young children to specific environments and experiences, providing direct, consistent interactions, and modeling behavior to establish the expected social and cultural norms of the family.

However, surveying the field of ethnic-racial socialization, it has become evident that research nearly exclusively has focused on the experiences of adolescents. This has been justly rationalized by the fact that adolescence is a key, sensitive period in which youth gain acute awareness of social relations and cues, and explore their ethnic/racial identities (Peck, Brodish, Malanchuk et al., 2014; Riina & McHale, 2012; Rivas-Drake, Hughes, & Way, 2009). Nevertheless, the

field's focus solely on adolescence has risked not acknowledging the socialization experience of young and very young children—a key concern of this dissertation.

In order to understand a longer-term unfolding and influence of ethnic-racial socialization, research must examine earlier periods of the life course.

Broadly, scholars have conceptualized ethnic-racial socialization strategies as mediating mechanisms for the academic achievement and adjustment for ethnic minority children (García Coll et al., 1996; García Coll & Szalacha, 2004; Rodriguez, Umaña-Taylor, Smith, & Johnson, 2009). Likewise, in empirical studies of older children and adolescents researchers have investigated the links between these socialization strategies and academic outcomes (Rivas-Drake et al., 2009). In order to test these models in young children, academic achievement and adjustment must be represented in a useful and developmentally appropriate way.

As such, this study considered school readiness as a multi-dimensional set of child competencies to represent healthful school adjustment in early childhood. During early childhood both children and parents prepare for and adjust to children's transition from the home environment to the formal school environment. This preparation includes building the cognitive and socio-emotional skills necessary for success in transitioning to social contexts outside the home, but particularly for success in school. School readiness, conceptualized as a multi-dimensional indication of children's preparedness for school contexts, is considered foundational to learning in school. Competencies represent physical, intellectual, cognitive, emotional, and behavioral fitness, which in the right

constellation promote later academic achievement among other outcomes of child well-being.

There has been a small but important line of empirical work that has demonstrated early ethnic-racial socialization may be a protective factor for young children's school readiness (Caughy, O'Campo, Randolph, & Nickerson, 2002; Caughy & Owen, 2014). This line of research suggests brings attention to the early cultural home environments of young children. The young children in the present study were a cohort of children born to young mothers. Young mothers and their normative and adaptive parenting behaviors have also been underrepresented in the socialization literature at large; in fact it has been more common that when young mothers' parenting has been considered in the extant literature, it has been framed by a deficit orientation. Nevertheless, young mothers face the same parenting challenges and tasks that older parents face in preparing their children for social contexts outside the home, including their important transition to formal schooling. Thus, in this study, it was essential to ask whether these ethnic-racial socialization strategies were relevant to young mother's parenting practices; and given the promising protective links to school readiness, did ethnic-racial socialization appear as an adaptive feature of young mothers' socialization of their young children?

Addressing methodological concerns of this burgeoning field, Rodriguez and colleagues (2009) have underscored the importance of a balanced sampling scheme across investigations of ethnic-racial socialization. Just as there has been a need to "identify unique dimensions of family processes" utilizing within-group

designs, scholars have acknowledged that the field still needs to “reveal [sic] distinctions and commonalities” through comparative-group studies (p. 106). Although the field at large has increasingly examined ethnic-racial socialization across cultural groups and genders, most examinations to-date of young children have tended to be single-group studies: Here, the opportunity to examine variations of ethnic-racial socialization both within cultural groups and across multiple groups was possible because of the ethnically diverse sample available for this study.

Since an instrument to measure ethnic-racial socialization was applied to a novel population, here, young mothers of young children, confirming the validity of such assessment within and across the sample was considered an essential and prudent first step of investigation. Given that the measurement of ethnic-racial socialization includes a set of behaviors that inevitably reflect social position—and thus interpretation and response to such realities may meaningfully vary across levels of social stratification—it was also considered prudent to scrutinize the ecological and across-group validity of such measurement (Gregorich, 2006; Vandenberg & Lance, 2000).

Thus extending the promise of a limited but compelling line of research examining the ethnic-racial socialization of young children, through this dissertation I sought to understand in a diverse sample of young mothers the extent to which mothers' early ethnic-racial socialization behaviors were adaptive in promoting the school readiness of their children. The overarching aims of my study were to: (a) introduce and assess the application of an ethnic-racial

socialization instrument in a novel population, and (b) examine the predictive associations among these parenting behaviors, socio-cultural features of families, and early childhood competencies. In order to achieve these aims, I conducted two studies: the first study focused on issues of measurement and the second study focused on predicting ethnic-racial socialization behaviors and subsequently on ethnic-racial socialization behaviors predicting child outcomes.

Presentation of the Dissertation Study

In the following chapter I review the relevant literature and frameworks that undergirded this study. First, I review conceptual frameworks that forefront the importance of ethnic-racial socialization as an adaptive parent-child dynamic of the family context, as well as socio-cultural perspectives that inform the conceptualization of the study. After which, I provide an overview of the processes and outcomes in early childhood that have been linked to ethnic-racial socialization and review research that has addressed parenting behaviors and interventions with adolescent mothers and their families. Lastly, I provide overview of the dissertation study by detailing the two studies' main empirical tests and examinations.

In Chapter Three, I describe the study's overall methods, providing detail on the broader evaluation study from which the sample was drawn, recruitment and study procedures, the study's sample, and the analytic approach. In Chapters Four and Five, I present the Measurement and Predicting Outcomes studies, respectively. These chapters describe both studies in full, including their rationales, methods, and findings. Lastly, in Chapter Six, I present an integrated

discussion highlighting notable contributions of the study and its findings, alongside its limitations and potential future research.

CHAPTER TWO

REVIEW OF LITERATURE

The following review synthesizes conceptual frameworks of adaptive family processes and highlights processes in families from diverse cultural backgrounds to undergird this examination of early ethnic-racial socialization in young mothers. I then describe how ethnic-racial socialization has been linked to the social competencies of children, including very young children, and consider how such work has been operationalized to measure these behaviors in parents. Next, I consider the research that has examined home-to-school transitions with special consideration for young mothers. In the final section of this chapter, I introduce the two focal studies of this dissertation alongside the analytic framework used to implement them.

Ethnic-Racial Socialization as Adaptive and Promotive Family Process

Ethnic-racial socialization is a relatively broad term used to describe the construction and materialization of a process through which parents' messages about ethnicity, race, and culture are communicated to and interpreted by a developing child. Historically rooted in the study of African American families, the field investigating the parent-child process known as race socialization, or racial socialization, has long considered the challenges parents face and approaches they use when raising children who will encounter racial discrimination and prejudice at numerous levels of social life. In the past two decades, the field has expanded this line of inquiry to other ethnic and racial minority families in the U.S., echoing the objective to understand parent-child

processes in the context of anticipating a child's marginalized—and often *racialized*—social experience.

The rise in scholarly attention to ethnic-racial socialization in recent years has seemed timely and befitting to the dynamic shifts in the demographic, social, and political landscapes of the U.S. which can be expected to continue throughout the 21st century. Attending to the social issues and needs that result from these shifts is vital; as Hughes and colleagues have advised, "certainly, as the United States becomes increasingly diverse, a more complete understanding of the ways in which parents prepare their children to engage with and navigate this diversity will continue to be of critical importance" (Hughes, Rivas, Foust, et al., 2007, p. 274). As such, scholarship on ethnic-racial socialization has held promise to advance understanding of the processes that are normative and adaptive in families underrepresented across many subfields of developmental science, particularly parenting and socialization.

Conceptual Underpinnings of Culturally Inclusive Accounts of Socialization

Socialization is a broad, dynamic process and includes numerous necessary developmental tasks that work toward child social competence. Parents, as the principle agents of the process, promote the cognitive and socio-emotional competencies of their children across multiple domains of socialization (Bugenthal & Grusec, 2006). Fundamentally, parents provide security, physical safety, and quell stressors of their young children; and through other domains of socialization they guide children's development through problem solving and modeling, partnering with their children to achieve common goals, and leveraging

their authority to regulate behaviors and establish moral guidelines (Grusec & Davidov, 2010). The premise that parents also provide the basis of children's "training" toward cultural and social group membership is important to the study of ethnic-racial socialization. By modeling behaviors and exposing children to specific experiences, parents assist children in gaining a sense of roles, daily routines, and responsibilities as group members (Grusec, 2011; Grusec & Davidov, 2010).

It is important to note that socialization toward cultural and social group membership does not suggest that social groups are monolithic: there exist a diversity of socialization strategies, pathways, and child competencies within any cultural or social group (Bugenthal & Grusec, 2006; Mistry & Wu, 2010). In assessing contemporary, conventional models of human development, and specifically those of child socialization, there is evidence of concerted effort to incorporate aspects of these features of variation. Across prominent conceptual models such as the bio-ecological model (Bronfenbrenner & Morris, 2006), developmental contextualism (Lerner, 2002; 2004), or the transactional model (Sameroff, 1975) theorists have introduced and emphasized contextual variation in the study of development. For example, the bio-ecological model has embedded the developing individual in increasingly proximal contexts whereas developmental contextualism has strived to form a co-constitution of individual and context.

Methodologically, such efforts have manifested in a way that exposes the interaction of individuals and contexts; however, due to the limitations of analytic

techniques this has proven to be somewhat inflexible in portraying complex human experiences (and its associated variation). The inflexibility has first surfaced when the contextual assignment bestowed upon individuals has been done in a static fashion. It has also surfaced in modeling moderation techniques because individual-context interactions are necessarily and mathematically unidimensional. Thus it has been difficult to distinguish whether it has been theory or methodology that has conceived complex human experiences in a manner that has forced developmental relations to be the same for each member in a “contextual group”. For example, Bronfenbrenner’s model has proposed “culture” or “cultural group” as a contextual *feature* of the macrosystem. As such, an individual’s cultural group has been used to show variations in a developmental outcome, intimating a monolithic group explanation of between-group differences. Inherent in such a positioning of culture in the model has been a rather fixed notion of power and personal liberty; and indicates no resistance toward developmental outcomes due to social processes (discriminatory and otherwise).

However, the social position of ethnic minority families in the U.S. context is one characterized by historical marginalization, reduced freedoms, lack of power, and daily experiences with discrimination at multiple levels of social life (Boykin & Toms, 1985). Essentially and importantly, racialized social hierarchy has rarely been represented in prominent and conventional models of human development and if it has been, it has been represented as a static, social address variable (Mistry & Wu, 2010; Murry, Smith, & Hill, 2001). Through a sociocultural perspective, Mistry and Wu have advocated for a move beyond the

reliance on social address as a causal mechanism. The authors have underscored the notion that individuals and families both (a) are “situated within” a socially-defined and constructed context, and (b) interpret their experiences and circumstances vis-à-vis their knowledge of their social position. Given this emphasis—that development occurs both *within* socially-prescribed context *and through* individually-prescribed meaning—and the knowledge that there are distinct positions, features, and processes of development outside the mainstream, it is important to ask: Where and how do the normative processes of underrepresented groups fit into the conventional models of human development? And furthermore, where are some of the widest gaps in conceptualizing developmental processes across the great diversity of cultural, ethnic, and racial groups?

When studying ethnic minority families, a critical shortcoming of conventional models has remained in their inability to illustrate or acknowledge the pervasive social hierarchy; the power and privilege associated with superior position, and the marginalization of inferior positions.¹ Thus this dissertation study is grounded in an integrated framework of two models (Mistry et al., 2014) that have attended to the pervasive and influential structure of a racial social hierarchy. This integrated model (Figure 1) grounds socialization within the

¹ A central position of the aforementioned prominent frameworks—that developmental processes are interactive or embodied with the lived environment—certainly has merit. The depiction of an individual fused with context, moving along developmental pathways as a mutually responsive unit (Lerner, 2002), brings agency to both individual action and ecological location. It should be noted that critical responses to both ecological and relational frameworks have given rise to theories such as Spencer’s (1995; 2006) Phenomenological Variant of Ecological Systems Theory (PVEST) and Ogbu’s Cultural-Ecological model (1981) as well as García Coll et al. (1996) framework discussed here.

sociocultural circumstances and realities of being an ethnic minority or parenting as an ethnic minority in the U.S. context. The broader framework upon which the integrated model was built is García Coll and colleagues' *integrative model for the study of developmental competencies in minority children* (García Coll et al., 1996; García Coll & Szalacha, 2004). García Coll and colleagues have argued that the understanding of normative processes of children who are ethnic minorities must be complemented with explicit attention to the ecology of social stratification. The central path of this culturally-inclusive approach to socialization has illustrated how families form an adaptive culture in which children are taught how to healthfully respond to one's position in the social hierarchy. The authors have accentuated the experiences of racism and discrimination in the developmental pathways of minority children: moreover, the authors have accentuated "position factors" in their conceptual model for competence, that is "the attributes of individuals that *society uses* to stratify or place individuals in the social hierarchy" (emphasis added, 1996; p. 1895). These position factors represent the daily lived reality of life amidst discrimination, prejudice, and marginalization.

The second influence upon the integrated model is the heuristic model tested in a special section of *Cultural Diversity and Ethnic Minority Psychology* by members of the Study Group for Race, Ethnicity, and Culture (Rodriguez et al., 2009). The Study Group had proposed and tested a heuristic model wherein the relations between racial and ethnic socialization and child outcomes in the educational and psychosocial domains are mediated through the self-system (i.e.,

self-esteem and racial/ethnic identity). The emphasis on academic achievement and adjustment in this model have provided an excellent example of how to re-specify the complex García Coll et al. (1996) model to evaluate more specific mechanisms of child socialization.

Figure 1 depicts the integrated model guiding this study. Undergirding this model is the sociocultural perspective that posits individual development occurs both within socially-prescribed contexts and through individually-prescribed meaning. The left side of the figure comprises the experience at the socio-cultural community levels which provide a backdrop for, or are indicative of, processes within the family unit. Ethnic-racial socialization represents central adaptive family processes that parents initiate as they interpret, or “make meaning” of, their context and circumstance (Mistry & Wu, 2010). These socialization processes, alongside support for education, are posited to optimally promote academic achievement and adjustment both directly and through the self-system.

In this study, I made a few additional re-specifications to the model. First, because I was examining a parenting program intervention, I tested a new relation between socio-cultural resources at the community level and the adaptive processes within the family. Second, due to lack of data measuring self-esteem and racial/ethnic identity in the young children of the study's sample, I did not test the self-system processes of the model. Lastly, of note, I tailored the academic outcomes to reflect child adjustment and transition to school in a developmentally appropriate manner. Figure 2 depicts the above revisions.

Operationalization of Ethnic-Racial Socialization

For over two decades, the field has approached the study of ethnic-racial socialization through multiple, varied frameworks and constructs. Boykin and Toms' (1985) influential framework has acknowledged the distinct position of African American families; mainly the "triple quandary" of African American parents' tasks to socialize their children in (a) their own cultural heritage, (b) the White, mainstream culture, as well as (c) the intersection of the two—a socially intricate point at which children must be prepared to face discrimination. This tri-dimensional framework has activated much research in understanding parenting practices that examined *the promotion of racial pride*, *the preparing children for life in mainstream society*, and *the preparing children to deal with racism and discrimination* (p. 39).

The other predominant framework, introduced by Stevenson and colleagues (Stevenson, 1994; Stevenson, Reed, Bodison, & Bishop, 1997), has developed a research paradigm emerging from a dual-dimensional framework of "protective" and "proactive" racial socialization. In this framework, protective socialization is operationalized as parents' messages regarding racism in society and proactive socialization as parents' messages that focus inward on personal and racial group strengths.

For the most part, the general accounts of what has constituted ethnic-racial socialization fit within the multidimensional frameworks described above; however the field has operationalized these messages liberally in research, creating an abundance of terms that likely refer to similar themes (Bannon, McKay, Chacko, Rodriguez, & Cavaleria, 2009; Brown & Krishnakumar, 2007;

Hughes et al., 2006b). For example, in one of the only studies that has examined the potential fluctuations of racial socialization experiences across generations, Brown and Lesane-Brown (2006) examined themes of *individual pride*, *racial group pride*, *deference to and fear of white*, *color-blind* (harkening an “equality for all” message), and *learning whites are prejudiced*. These constructs were originally developed by researchers at the Program for Research on Black Americans at the University of Michigan in the early 1980s. Or, for example, from the field of applied clinical psychology, Coard, Wallace, Stevenson, and Brotman (2004) have used qualitative data from interviews of 15 African American mothers of young children to examine “culture-based parenting practices” (p. 288), from which narratives revealed distinct themes of what the authors termed, *racial achievement*, *preparation for racial bias*, *racial equality*, and *instilling racial pride*.

Moreover, some scholarship has focused efforts primarily on themes of ethnic socialization. Umaña-Taylor and colleagues have developed frameworks such as *familism* and *family ethnic socialization* to study Latino families (Umaña-Taylor, Bhanot, & Shin, 2006; Umaña-Taylor & Fine, 2004). In another line of research, Quintana and Vera (1999) have sought to understand the role of *parental ethnic socialization* in children’s cognitive approaches to discrimination.

Hughes and colleagues’ (2006b) well-regarded review of the field has demonstrated that four main themes emerged in their investigation of over 50 empirical papers. These themes, *cultural socialization*, *preparation for bias*, *promotion of mistrust*, and *egalitarianism and silence about race* (p. 748) have

since structured much of the contemporary empirical literature, (although investigations to extract more specific themes persist, especially in qualitative research (see Barr & Neville, 2008; Moua & Lambourn, 2010)). In this study, I operationalized ethnic-racial socialization in alignment with framework set forth by Hughes and colleagues, specifically focusing on themes of *cultural socialization* and *preparation for bias*.

Ethnic-Racial Socialization as an Intentionally “Broad Term”. As follows, a central historical tension in the study of ethnic-racial socialization has involved the lack of distinction between ethnic socialization and racial socialization—both conceptually and empirically (Quintana et al., 2006). Hughes et al. (2006b) have noted that the histories of ethnic socialization and racial socialization research have referred to similar processes in ethnic and/or racial minority families. The authors have argued that both traditions are “too broad to be empirically useful” and have emphasized using the term “ethnic-racial socialization” when referring to the broader idea that parents provide messages to their children regarding culture, ethnicity, race, and social stratification; but that empirical questions should focus on the substantive distinctions of content in messages specific to themes *cultural socialization*, *preparation for bias*, *promotion of mistrust*, and *egalitarianism and silence about race*. Consequently in the present study, the themes of *cultural socialization* and *preparation for bias* were defined as follows.

Cultural socialization. The operational definition of cultural socialization in this study represented what Hughes et al. (2006b) have designated the “parental

practices that teach children about their racial or ethnic heritage and history; that promote cultural customs and traditions; and that promote children's cultural, racial, and ethnic pride, either deliberately or implicitly" (p. 749). This definition signified that cultural socialization messages "tap into" a specific aspect of children's more global self-esteem and sense of cultural identity.

Preparation for bias. The operational definition of preparation for bias in this study reflected what Hughes et al. (2006b) have detailed as "parents' efforts to promote their children's awareness of discrimination and prepare them to cope with it" (p. 756), which highlighted the idea that parents educate their children about racialized histories and stratification but concomitantly introduce how to function at present (and in the future) with respect to those histories. The knowledge gained by children through preparation for bias directly targets knowledge for coping strategies, whereas cultural socialization targets knowledge for children's senses of self.

Ethnic-racial socialization in relation to social position. Thus far, most of the literature on ethnic-racial socialization has examined the parent-child dynamic among African American and other racial/ethnic minorities in the U.S. Likewise, the guiding conceptual model of this study positions ethnic-racial socialization as the adaptive response and mechanism of ethnic/racial minority families. However, I argue the measurement of ethnic-racial socialization behaviors need not be limited to ethnic/racial minorities.

Bugenthal and Grusec (2006) have described the ways in which parents promote socialization in the *Coalition Group/Group Membership* domain,

whereby children learn the definition, features, and activities normative to their own social group, while reserving distinction from other social groups. To this end, and in considering the intentions of *cultural socialization*, it should be noted that *regardless of social position, all parents* have the potential to engage in practices and provide messages that maintain their familial cultural legacies in their children and instill cultural pride.

Considering the means and ends of parents' *preparation for bias* messages, it should be noted that while contents include preparing children to cope with marginalization, prejudice, and discrimination, other aspects of *preparation for bias* include understanding social stratification—and most importantly understanding one's position and one's group's position in that social hierarchy (also akin to the ends of the *Group Membership* domain). In this sense, all parents have the potential to prepare their children to face a socially-stratified society and to that end, research must evaluate these kinds of tasks vis-à-vis families' *relative position within a stratified society*. Consequently, *because of the variation in families' relative social position*, the resulting parent-child interactions and the social competencies of children may very well take on different qualities and virtues; and the emphasis, or meaning, attached to the ethnic-racial socialization process may vary as well (Grusec, 2011).

Developmental Considerations in the Study of Ethnic-Racial Socialization

With the ultimate interest in child well-being, ethnic-racial socialization has been examined in service of understanding child outcomes; either as a predictor of child well-being, as a mediating or coping mechanism (Neblett, Jr.,

Rivas-Drake, & Umaña-Taylor, 2008; Stevenson, Cameron, Herrero-Taylor, & Davis, 2002), or as a moderator of other ecological circumstances or experiences (Riina & McHale, 2012). Additionally, in acknowledging the broad scope of themes across ethnic-racial socialization research, it is unsurprising that the field's empirical examinations have tapped into many domains of child well-being.

To these ends, authors have examined ethnic-racial socialization in the service of child and youth outcomes in ethnic-racial identity and ideology development (Barr & Neville, 2008; French & Coleman, 2012; Stevenson & Arrington, 2009; Umaña-Taylor et al., 2006). For example, researchers interested in the self-systems have found positive relations between cultural pride and middle school youth self-esteem with peers (Constantine & Blackmon, 2002), and protective, moderating effects of preparation for bias and messages of equality for self-esteem in young Latinas with dark skin color (Telzar & Vazquez Garcia, 2009). There has been much attention in the literature paid to the protective role of ethnic-racial socialization in coping with discrimination and perceived discrimination of youth (Granberg, Edmond, Simons, Gibbons, & Lei, 2012; Neblett, Jr., et al., 2008; Rivas-Drake, et al., 2009). There has also been substantial interest in psychological outcomes including depressive symptomology (Granberg et al., 2012), antisocial behaviors (Hughes, Witherspoon, Rivas-Drake, et al., 2009b), and externalizing behaviors (DeGruy, Kjellstrand, Briggs, & Brennan, 2012; Stevenson et al., 2002).

Most germane to the focus of this study, researchers have examined interesting pathways between ethnic-racial socialization and academic functioning

of youth (see Mistry et al., 2014 for review). These efforts, for example, have indicated that ethnic-racial socialization can be adaptively supportive to both self-esteem and self-presentation in academic settings (Murray, Berkel, Brody, Miller, & Chen., 2009) and directly predict academic engagement and efficacy (Hughes et al., 2009b).

However, the field has focused almost exclusively on the outcomes of adolescents. This has often and justly been rationalized by researchers who cite that adolescence is a key or sensitive period in which youth gain acute awareness of social relations and explore their ethnic/racial identities. For example, Riina and McHale (2012) hypothesized that higher frequency of cultural socialization and/or preparation for bias messages would buffer the association between teens' experiences of racial discrimination and family relationship problems. Here the authors noted that the experience in this period is one in which ethnic/racial minority youth increasingly are both aware of and victims of discriminatory acts. In fact, the authors controlled for youth age, anticipating that younger adolescents would not be as aware as older adolescents; thus noting that even within the adolescent period there is nuance and growth in social awareness. Rivas-Drake et al. (2009) argued that the prevalent focus on mid- and late adolescence has contributed to a gap—that not enough is known about these relations in *early adolescence*. The authors stated that “early adolescence presents a unique developmental opportunity for understanding... because youth at this period have less experience with various ethnic and racial cues than do older adolescents” (p.560).

As such, the persistent focus on the adolescent period has presented the need to extend research to other periods of the early life course so that the field may consider the longer-term development and influence of this parent-child dynamic. Expanding upon Rivas-Drake and colleagues' concerns, I argue that the field also risks not acknowledging the socialization experiences and interactions of young and very young children. Overlooking this process in early childhood has disregarded a formative period in which children enter formal social institutions of child care and school. Additionally, it has exposed a gap in understanding the ontogenetic and other developmental properties of ethnic-racial socialization across the life course. Lacking information on the origins of and long-term exposure to this process has indeed limited the field's current understanding of associative and predictive findings: at present, knowledge of this phenomenon exists within finite instances along developmental pathways in the adolescent period with no consideration of longer term socialization exposure. As such, when taking the study of ethnic-racial socialization "out of" the adolescent period and placing it in early childhood: what must be considered?

Developmental Considerations in the Study of Young Children.

In short, there are an abundant number of developmental considerations to take when extending phenomenological inquiry to a novel period of the life course. However, here, I aim to highlight three critical perspective shifts I considered important to this study. These considerations include: (a) understanding the young child's experienced environment, (b) recognizing the cognitive skills and social cognition of young children, and (c) defining the roles

of parent and child in their interpersonal communication. First, the experienced environment for young children includes a social life primarily made up of the family environment and the immediate neighborhood, in which young children spend most of their social time with adults (Rimm-Kaufman & Pianta, 2000). The immediacy of caregivers in familiar places seems ideally suited to set the stage for consistent socialization. Unlike children and youth, young children have limited independence from their caregivers and thus the experienced environment forefronts the parent as a singular, focal model of socialization (Bugenthal & Grusec, 2006).

Moreover, due to gains in cognitive skills, young children continually gain skill in interpreting their social worlds. However, early childhood also represents a period in which young children hold “innocent,” strong biases in regards to ethnic/racial groups (Lam, Guerrero, Damree & Enesco, 2011). For example, it is thought that around the ages of 4-5 is when differentiation and preference based on racial categories is at its peak (and, for all children, this preference typically favors individuals in the White racial group). In fact, young children have the ability to discern race affectively prior to being able to discern race through physical features (Quintana, 1998). One possible reason for this is that the social cognition of young children is quite immature; children tend to group and categorize social phenomena in their world while not understanding the underlying social stratification processes that more cognizant individuals use to discriminate the same social phenomena. Thus, messages that may be protective for older children may not serve the same role for younger children.

In addition, the reasoning for young children to have such strong bias along “racial” lines is not based on stratifying, but rather on cataloging what they are learning. This has implications on what they interpret when they receive messages regarding culture, ethnicity, and race and raises intricate questions: Do young children catalog messages alongside the racially differentiated groups they know or are forming? And what messages are appropriate given the immaturity of young children’s social cognition?

Lastly, the way in which parents and young children communicate is distinct from the ways in which parents and older children and adolescents communicate. On one hand, the frequency of direct communication is high compared to that of adolescents; on the other hand, young children have emerging language skills while parents have advanced language and cognition. There is also a demand to commit attention to nonverbal cues; either when the child is not able to verbally produce language, or when there is a recognizable need to model behavior. In a similar vein, the roles of the parent and child much more reflect the teacher/guider: learner/follower dynamic (the parent-as-model) across many different kinds of interactions, rather than collaborative learners or autonomous entities found in the dynamic of parents and older children. Thus, it is important to consider what are the appropriate ways to measure these communications.

Early Ethnic-Racial Socialization of Young Children

While studies have primarily examined samples of adolescents, there have been a small number of inquiries examining parents’ use of ethnic-racial socialization with young children. Based on frequency and prevalence of African

American parents' messages of cultural socialization, preparation for bias, and promotion of mistrust across different age groups, Hughes and Chen (1997) have found that parents' frequency of cultural socialization messages did not differ across children's age groups, (that is, all children in their study received these messages in relatively equal doses); however, messages of racial socialization were much higher in frequency with older children. Examining qualitative data, Suizzo, Robinson, and Pahlke (2008) have focused on early parental socialization in 18 African American families and their interviews revealed that parents indeed discussed the history of African Americans with very young children (ages 3-6) and, additionally, viewed their *promotion of education* as a conduit for surmounting racial inequalities.

Employing the 18,000 families of the ECLS-K data, Brown, Tanner-Smith, Lesane-Brown, and Ezell (2007) have explored the situational and relational correlates for parents who provide messages of ethnic/racial heritage to their children prior to kindergarten. Not only did the authors find very high prevalence of these messages in the ECLS-K families, but results also revealed that likelihood of discussing children's ethnic/racial heritage was higher for minority families than White families; higher for girls than boys; and higher for children who had low percent of ethnic/racial representation in their schools.

Moreover, Brown, Tanner-Smith, and Lesane-Brown (2009) have extended this work by examining the associations among family ethnic/racial socialization and early academic assessments in the ECLS-K, maintaining that ethnic-racial socialization was formative for self-affirmation for children of color.

In this study, family discussion of children's ethnic/racial heritage predicted higher general knowledge in kindergarten as well as math and reading assessment scores—but only for children who received moderate frequencies of messages. Additionally, this association disappeared when predicting children's first grade assessments.

Moreover, Caughy et al. (2002) have sought to understand the cultural home environments of African American families with pre-school age children, having asserted that the cultural home is the preparatory environment for children as they enter formal institutions of schooling. Their examination of 200 African American families was among the first to study ethnic-racial socialization in children this young. The authors found that a home rich in African American culture linked to pre-schoolers' higher factual knowledge and higher scores on problem-solving tasks, while parents' messages of African American pride linked to fewer externalizing behaviors. Focusing on the prevalence of socialization messages, the authors had found that messages of pride were incredibly prevalent—close to 90% of the sample endorsed provision of these messages—while about 65% of the sample endorsed preparation for bias and promotion of mistrust messages.

Early Childhood: Transition from Home Environment to Formal Institutions

The later years of early childhood is marked by transitions to pre-school and kindergarten. These transitions represent shifts in both the physical and social environments of young children and thus represent shifts in how children move through and make meaning of their daily experiences. Concurrently, young

children transitioning to school are gaining cognitive skills and maturing physically such that the period is also marked by children integrating intra-personal development with prominent social and contextual changes (Doherty & Hughes, 2009). Whereas pre-school historically has had an emphasis on social development, more recent demands for academic achievement across the U.S. have resulted in increased formal pre-K academic instruction (Bishop-Josef & Zigler, 2011). Rimm-Kaufman and Pianta (2000) have described transitions to school as the “entry into the culture’s system of formal education, [in which] expectations of responsibility and independence within that system, is one correlate of this shift” (p. 493). Thus, the management of all these transitions, developments, and changes demands much competence on the part of the young child and as such much attention has been paid to just how children become fit for this transition.

School Readiness

Successful transitioning to the formal school context of kindergarten demands readiness for both learning experiences and new social and physical environments. Scholars have conceived school and kindergarten readiness in many different ways and have often done so in a multi-dimensional manner; for example, Duncan et al. (2007) have examined intellectual skills (reading and math), attention, internalizing and externalizing behaviors, and social skills in their meta-analytic review of key national databases. Moreover, scholars who champion a balanced approach to “readying” children for school contexts have argued the parallel development of children’s intellectual and socio-emotional

competencies as equally important (Phillips & Shonkoff, 2000). The immediate demands that the transition into school poses has compelled researchers to understand the optimal development of school readiness in young children; but the links between school readiness and later academic achievement have also concerned researchers interested in developmental features of learning (Rimm-Kaufman & Pianta, 2000). Intellectual competence—numeracy, literacy, language skills—perhaps have the most clear link to later learning; but researchers have considered the less overt role of attention in later achievement (Smith-Donald, Raver, Hayes, & Richardson, 2007). Socio-emotional and behavioral competencies allow for collaborative learning and peer acceptance in the early school environment, which set the stage for later adjustment, school belonging, and learning opportunities (Pianta & Stuhlman, 2004).

Young Mothers' Normative and Adaptive Parenting

The study of young mothers in the U.S. context, especially those who give birth during the teenage years, has primarily been the study of risk (Fagan & Lee, 2013). First, the consideration of features and experiences of young females who become adolescent mothers has involved assessing the propensity of risk in the maternal ecology and environments; examples such as low educational attainment among young mothers' parents, being born to an adolescent mother, legacies of alcohol and substance abuse, and depressed local economies and limited opportunities structure much of what is known about the likelihood of becoming an adolescent mother (Manlove, 1998; Maralani, 2011). Second, research on the associated personal and interpersonal effects of having a child in the teenage years

has mostly examined how parental risk is heightened for young parents: for example, research has demonstrated that children born to adolescent mothers have poorer health outcomes, language competencies, and self-regulation skills than children born to older parents (Briceno, De Feyter, & Winsler, 2013; Fagan & Lee, 2013). However, within group studies and much ethnographic work has demonstrated that there is variation in the functioning of both young mothers and their children and thus much is left to be more fully understood (Clemmens, 2003; SmithBattle, 2007a; 2007b).

Unfortunately, examining links between young mothers and school readiness outcomes to-date has not been an exception to the rule: there is much comparative group evidence to suggest that teenage birth is uniquely associated with poorer child cognitive skills (Briceno et al., 2013) and behavioral outcomes (Geronimus & Korenman, 1992) as children enter pre-school and kindergarten. Without consideration to the within-group variation, generally, these relations have been thought to be mediated by cognitive stimulation provided by parents. This is why a focus on parenting skills is an important avenue of intervention; theories of change have posited that families may achieve more optimal outcomes if intervention targets parenting behaviors such as stimulation and engagement (Kirkland & Mitchell-Hertfeld, 2012).

Adolescent Parents: Supports along the Way

A growing number of studies have examined the promise of adolescent parenting intervention programs to promote optimal family health. Home-based parenting interventions have been designed as resources to improve mechanisms

that lead to more optimal educational, workforce, and health outcomes for mothers, and overall well-being for children born to young mothers. (This notion is reflected in the revised conceptual model that guided this study). As the Council on Community Pediatrics (2009) has stated,

“home visiting programs offer a mechanism for ensuring that at-risk families have social support, linkage with public and private community services, and ongoing health, developmental, and safety education. When these services are part of a system of high-quality well-child care linked or integrated with the pediatric medical home, they have the potential to mitigate health and developmental outcome disparities” (p. 598).

A recent focus of intervention research has been the longitudinal impacts of intervention on child academic achievement and adjustment. Within this recent literature, there has been very limited and mixed results on the longer-term impact of home visit programs for young parents (Kirkland & Mitchell-Hertfeld, 2012). However, there have been some encouraging outcomes in school achievement and adjustment of young children found among home visiting models for older and mixed-age group samples, low-income families, as well as school-based, family-centered models in high-risk environments (Brotman, Dawson-McClure, Calzada, et al., 2013).

In the Nurse-Family Partnership (NFP) model there has been evidence from multiple sites and distinct regional samples (Northeast rural, majority White, Western, mixed-race sample, and mid-Atlantic urban, African American) regarding the “sleeper” effects of nurse practitioner visits. In the NFP diverse

multi-group sample of over 600 mothers who qualified as having poor “psychological resources”, the children in the intervention group had many gains on the children in the control group at the age four follow-up. Children who had received the NFP intervention evidenced more advanced language, executive functioning, and behavioral regulation than their control group peers (Olds et al., 2004). Additionally, mothers in the intervention group were shown to provide more scholastically enriching homes for their children than those in the control. In a subsequent randomized-control NFP evaluation, Kitzman et al. (2010) followed up on the first-born children ($N=613$) of low-income African American mothers at approximately 12 years of age (through their sixth year of schooling). Findings revealed that the intervention group children scored higher on the Peabody Individual Achievement Tests in both reading and math, scored higher on standardized reading and math achievement tests, and had more optimal behavioral outcomes (i.e., clinical incidence of internalizing disorders) than the control group.

Turning to the same national model as the one in the present study, Healthy Families New York (HFNY) has shown promise in regards to program impact on early childhood academic achievement and adjustment outcomes. DuMont et al. (2011) identified in their evaluation a “High Prevention Opportunity” group of mothers who were under 19 years of age at program enrollment and whose children revealed more marked gains over that of the peer control group. Specifically, these children at age seven were more likely to be in a

gifted program, less likely to repeat a grade, and were scoring more optimally on the receptive vocabulary tests than the children in the peer control group.

Most recently, Kirkland and Mitchell-Hertfeld (2012) showed that in a first-grade follow up of HFNY children, intervention group children had double the odds of excelling academically over that of control group children. More specifically, intervention group children were double in proportion for scoring highly on behavior regulation assessments and were less likely to be doing poorly in scholastic tests. The authors attributed these gains in academic outcomes to the program's emphasis on promoting positive early parenting behaviors.

Diverse Experiences, Features, and Pathways of Socialization

Mistry and Wu (2010) purported that socio-cultural features of the community give rise to adaptive and developmental processes at the family and individual levels, but not in a prescribed or singular manner. Rather, it is the examination of how families construe their environment and assess, or "make meaning" of, their strengths and challenges and "fit" within a particular context that highlight how developmental outcomes at an individual level unfold. Thus it is important to understand the diverse ways in which mothers relate to the features of their experiences and contexts. Drawing on these sociocultural perspectives (Rogoff, 1990; Vygotsky, 1962, 1978) I dismissed the notion that there is a singular process by which ethnic minority families adapt to marginalization. For example, in this study, features of neighborhood and maternal experience are both necessary to examine in relation to one another and to mothers' ethnic-racial socialization behaviors, but as this was an initial inquiry into this group the

research objectives centered fundamentally on describing these as concurrent relations rather than prescribing unidimensional moderated relations from the start.

Inclusion of European-American participants.

This study's guiding conceptual model highlights the experience and daily realities of families who experience life as ethnic/racial minorities. However, it is important to note that increasingly both theoretical and empirical works seek to include individuals of European origin in the study of ethnic-racial socialization (Spencer, 2006). Examining European-Americans allows the field to consider the variation of experience within the ethnic majority group, with ecological (and pragmatic) consideration of the fact that in the U. S. this group has experienced increased ethnic diversity of communities and schools (Hughes et al., 2009b). Moreover, in the U.S., families have become more multi-ethnic/racial within and across generations. Conceptually, socializing toward one's cultural heritage is a task for ethnic majority parents, too, and thus these parenting behaviors should be studied across all groups.

There is also merit to including ethnic majority groups in the study of the adaptive family processes of racial socialization: first, it is possible there are adaptive mechanisms in place within these families within heuristic models that simply have gone unrecognized (see Hughes et al., 2009b). Second, given the privileged position in the racial social hierarchy, it is possible that European-American families do not have nor require adaptive mechanisms in the family context. Empirical investigations and findings of this nature may further support

the idea that racial socialization is a responsive and adaptive process for ethnic minority families; essentially, the absence of such a mechanism is the adaptive norm for European-Americans. This study's sample included European-American mothers and their children, and as such, inclusion of this group represented an exploration into these ideas.

Overview of the Dissertation Study

Parent-child processes at home in the early childhood period have been conceptualized as a central guiding feature of young children's social development (Grusec, 2011; Rogoff, 1990; Vygotsky, 1962, 1978). Research has demonstrated that one such process, early ethnic-racial socialization, has been endorsed and enacted by parents of young children (Brown et al., 2007; Caughy et al., 2002; Suizzo et al., 2008); but currently there remains limited knowledge about how this process and its associated parenting behaviors link to domains of well-being in early childhood. Although there are studies that have examined early ethnic-racial socialization, there are currently no studies that have examined how young mothers enact socializing their young children with respect to culture, ethnicity, race, and social stratification.

Given the limited number of studies examining early ethnic-racial socialization, in general, and specifically in children born to young mothers, I sought to make a sensible contribution to the field through the aims of this dissertation's two studies:

- *Study 1. Measurement:* Introduce and assess the application of an ethnic-racial socialization instrument in this novel, diverse population of young mothers.

- *Study 2. Predicting Outcomes:* Examine the predictive associations among these parenting behaviors, family socio-ecological features, and early childhood functioning.

In Study 1 I sought to test: (a) the validity of a 2-factor model prominent in the ethnic-racial socialization literature of older parents in a young parent sample; and (b) the measurement equivalence of the ethnic-racial socialization instrument across the sample's ethnic/racial groups. In Study 2 I examined: (c) the extent of variation of early ethnic-racial socialization practices of young mothers across maternal, child, and neighborhood correlates; and (d) indirect pathways among parent program intervention, mothers' early ethnic-racial socialization behaviors, and children's school readiness.

CHAPTER THREE

OVERVIEW OF METHODS

The present study examined data from the Massachusetts Healthy Families Evaluation Cohort 2 (MHFE-2) of Tufts University's Eliot-Pearson Department of Child Study and Human Development and Department of Urban and Environmental Planning and Policy (Goldberg et al., 2009). The Tufts University Institutional Review Board for Social, Behavioral, and Educational Research approved this study and its protocol is #0705005 (see Appendix). The current study's aims focus primarily on Time 4 (T4) data from MHFE-2's Early Childhood follow-up study (MHFE-2EC), which were collected from January 2013 through June 2014. The broader procedures of MHFE are described below.

Overview of MHFE Study

Massachusetts Healthy Families Evaluation

MHFE-2 was a two-year longitudinal, randomized control trial evaluation of Healthy Families Massachusetts (HFM, see below). MHFE-2 employed a mixed-method framework grounded in Jacob's (1988/2008; 2000; 2003) Five-Tiered Approach to program evaluation which emphasizes that evaluation activities should strive to capture the developmental properties of programs and as such progress from static program descriptions to program processes to program outcomes and impact. This evaluation sought to understand both HFM program processes and functioning within the intervention group as well as measure program impacts on five main goals of HFM between the intervention and control groups. By and large MHFE-2 sought to understand the individual, family, and

community circumstances of 704 first-time, young mothers as they interacted with and were influenced by HFM and other services.²

Healthy Families Massachusetts

Healthy Families Massachusetts is a newborn home visiting program for all first-time parents ages 20 and under in the commonwealth of Massachusetts. It is based on the Healthy Families America home visiting program model and uses para-professionals to provide services to young parents beginning in the prenatal period until the child's third birthday. It pursues five main goal areas: (a) prevention of child abuse and neglect by supporting positive, effective parenting; (b) achievement of optimal health, growth, and development in infancy and early childhood; (c) encouragement of educational attainment, job, and life skills among young parents; (d) prevention of repeat pregnancies during the teenage years; and (e) promotion of parental health and well-being. HFM operates mainly through a home visiting model, though parents also may opt to participate in group-based activities. Weekly, bi-weekly, and monthly programmatic supports include goal-setting activities, provision of information on child development, and referring parents to community resources.

Recruitment

Between February 2008 and October 2009, eligible participants across the state (meaning female, 16-20 years of age, new to HFM, fluent in English or Spanish, and cognitively able to provide informed consent), seeking to enroll in HFM were randomly assigned either to the intervention or control group.

² Principal Investigators for MHFE-2 include: M. Ann Easterbrooks, Ph.D., Francine Jacobs, Ed.D., and Jayanthi Mistry, Ph.D. For detailed information on the evaluation project see MHFE-2 website at <http://ase.tufts.edu/tier/evaluations/>.

Approximately 61% of the 704 participants were randomly assigned to receive HFM intervention. MHFE-2 collected data from 2008-2012 at three time points; at enrollment (T1), 12-months post-enrollment (T2), and 24-months post-enrollment (T3). At baseline sample participants averaged 18.7 years of age; 66% of adolescents in the sample were pregnant, and 33% were parenting. The baseline sample was ethnically/ racially representative of the population of teenage mothers across the state: 40% White non-Hispanic, 32% Hispanic/Latina, 15% Black non-Hispanic, and 13% included Multi-racial, Asian, and Other non-Hispanic mothers. MHFE-2 retained over 80% of the baseline sample at subsequent points of data collection.

In the Early Childhood study, 70% of the baseline sample was retained for the 60-months post-enrollment follow-up (T4). Families were “re”-recruited from across the state using strategies that were successful in MHFE-2, including gift card incentives, intermittent phone call check-ins, drop-in visits to participants' homes, and use of social media.

Procedures for MHFE-2EC T4

For its T4 data collection, MHFE-2EC employed a mixed-method approach that mirrored T1-T3. Data were collected through phone and in-home interviews, observations, standardized measures, and state agency databases. Additionally, MHFE-2EC conducted direct assessments of children during the in-home interviews (this was not a feature of T1-T3). Phone interviews were first conducted to gain information on housing, service usages, public assistance usages, employment, education, child care, health, and family planning. Then, an

in-home research interview was conducted and included a semi-structured interview focusing on mothers' relationships to early child care and education settings, administration of "written" questionnaires (typically administered on smart tablets), and observations of mother-child interactions. The in-home interview also included a child protocol of interactive child assessments appropriate to child age. Mothers' verbal consent was obtained prior to phone interview, then written consent was obtained for mother protocol and child protocol prior to in-home interview, and child assent was established prior to assessments as well as multiple times during assessments. All participants received monetary gift cards.

Sample

Participants in the present study include 468 young mothers and their first-born children from the MHFE-2 sample who consented to T4 data collection. Table 1 provides sample-level characteristics at T4. The T4 sample remained ethnically/racially and geographically representative of young mothers across the state, however demographics reveal shifts from baseline in which there were slightly higher proportions of Hispanic/Latina and Black non-Hispanic mothers in the T4 sample than the T1 sample: approximately 37% of the sample self-identified as White non-Hispanic, 35% as Hispanic/Latina, 21% as Black non-Hispanic, and 8% included Multi-racial, Asian, and Other non-Hispanic mothers. Mothers were on average 23.7 years of age ($SD = 1.34$), the children of interest were on average 4.93 years of age ($SD = .47$), and just over half of the children were male (51.6%).

The proportion of mothers in the HFM intervention group remained at approximately 60%.

Overview of Data Analytic Plan

In Chapters 4 and 5, I review measures, research questions, and hypotheses specific to Study 1 and Study 2 respectively. Below, I present a general overview of the analytic plan and describe features of data treatment relevant to both studies.

Data / Software

I obtained MHFE-2EC data in multiple datasets and used multiple data analytic software for data treatment:

IBM SPSS Statistics 21. I conducted nearly all pre-processing activities, such as data cleaning, exploratory univariate and bivariate analyses, and preliminary data analyses in IBM SPSS Statistics 21 (IBM Corporation, 2014). Additionally, I compiled the supermatrix correlation tables (see below) using SPSS.

ArcGIS 10.1. In order to examine variables representing the neighborhood context (*median household income, population density, and percent European-American, see Chapter 5*) I geocoded participant T4 addresses and integrated address information with 2010 U.S. Census data at the block group level in ArcGIS 10.1 (ESRI, 2011).

Stata IC 13. I multiply imputed the full, cleaned analysis dataset using the *mi* module commands in Stata IC 13 (StataCorp LP, 1985-2013). I detail analytic procedures specific to the handling of missing data below.

Mplus 7.2. Analyses for the two studies required multiple statistical strategies: I tested all confirmatory factor analyses (CFA), multi-group CFA, and structural equation models (SEM) using Mplus 7.2 (Muthén and Muthén, 1992-2014).

Stat/Transfer. In order to facilitate clean and timely format transfers of data among the different software packages, I used Stat/Transfer software (Circle Systems, Inc., (1986-2013) to convert (a) SPSS .sav files to Stata .dta files, (b) Stata .dta files into Mplus .dat files, and (c) Stata .dta files into SPSS .sav files. (Data file outputs from ArcGIS read directly into SPSS).

Data Preparation

I appropriated data from thirteen MHFE-2EC datasets, then cleaned and combined data into a full dataset which included the 57 measured indicators to be used across the two studies' analyses, as well as 24 variables that were used as auxiliary variables to inform the imputation model. Next, I screened case IDs against an updated exclusion list provided by MHFE-2EC which detailed changes in participant consent for uses of data. I then examined variables in the original full dataset in exploratory data analyses: checking univariate normality assumptions, documenting descriptive statistics, and conducting bivariate correlations among analysis variables and between key indicators and auxiliary variables as recommended by Collins, Schafer, and Kam (2001).

Treatment of Missing Data

As is common in applied research, missing data persistently appeared among the study's sample response patterns. To address this issue, I employed the

modern missing data procedure of multiple imputation (MI; Rubin, 1987).

Multiple imputation was the optimal choice for handling missing data in the present study mainly because it was (a) flexible for developing an indicator parceling strategy for Study 2 and (b) not restrictive toward the use and quantity of auxiliary variables across multiple sub-studies, for example, the present study required multiple child and maternal auxiliary variables (Enders, 2010).

Additionally, MI allowed for the information of variables across the multiple, related analyses to inform the data augmentation process of each analysis (Little & Rubin, 2014; Schafer, 1997).

Missing data patterns. Percent missing ranged from 0% (multiple variables, including *maternal ethnicity/race*) to 28.6% among variables (“Talked to my child about racial/ethnic differences with her/his physical features or others’ physical features”) such that approximately 11.2% of the total data were missing among the analysis variables. Approximately a quarter of the sample had full data. (Univariate proportions of missing data are displayed in various tables under columns titled “% Valid”). Patterns of missing data were treated as MAR (Schafer & Graham, 2002). Of the 57 analysis variables, only two, *maternal race/ethnicity* and *child race/ethnicity* were treated as nominal variables; five were binary; and the remaining variables were treated as interval; additionally, all auxiliary variables were interval.

Imputation model. I built the imputation model in Stata 13 using the `mi impute mvn` command. This command uses the Bayesian iterative Markov Chain Monte Carlo method to augment the observed (i.e., nonmissing) data; it is

theoretically based and has been found to be relatively robust to nonnormal multivariate data conditions (Schafer, 1997). I first dummied *child race/ethnicity*, then tested the convergence of the imputation model as recommended by Schafer (1997) and Enders (2010) using the *mcmconly* option. The model algorithm converged at the 95th iteration and a review of the worst linear function estimates revealed no apparent trends while the autocorrelations died out quickly, prior to 5 augmentation cycles. I imputed the sample as a whole using a Jeffreys noninformative prior over $m = 100$ datasets,³ which was the number of datasets recommended for the supermatrix technique (Lang & Little, 2013) I employed across all analyses (Little, T., personal communication, February 10, 2015).

Post-imputation procedures. Post-imputation checks included scanning the data to ensure means were within the range of the raw data. I re-constituted the *child race/ethnicity* variable into a 4-category variable using the rounding rules outlined by Allison (2003)⁴ and derived *child minority* from the reconstituted variable. I then created the Study 1 analysis dataset by converting all $m = 100$ Stata datasets individually into Mplus .dat files; then created the Study 1

³ Graham, Olchowski, and Gilreath (2007) demonstrated $m = 40$ datasets was an ample number of imputations even when the fraction of missing information is high. Whereas this is not the case in the present study and $m = 100$ is considered a large number of imputations, the recommendations for the supermatrix dictated the number of imputations run.

⁴ Allison's solution includes this example: "suppose that marital status has three categories: never married, currently married, and formerly married. Suppose we create a dummy variable N for never married, and a dummy variable F for formerly married, with currently married as the reference category. For those people with missing data on marital status, it is possible for a person to get imputed values for N and F that are both greater than .5. Rounding these up to 1 would mean that the person would be classified as both never married and formerly married. My ad hoc solution for dealing with this problem is this: Impute as usual. Calculate $1 - N - F$, to produce an imputed value for C, the currently married category. Checking the three imputed values, assign the person to the category with the highest imputed value. If this is category C, both N and F would be coded as 0. The extension to four or more categories should be straightforward" (2003, p. 552-553).

supermatrix dataset by first converting the $m = 100$ datasets into a single stacked dataset in Stata, then converting that dataset into a SPSS .sav file where it was not recognized as an imputed dataset. I used parallel procedures later on for the Study 2 analysis datasets.

Analytic Approaches to Address Issues of Measurement

This dissertation's research aims centered on issues of measurement and patterns of relations among constructs set within a correlational design. Here I will provide a brief rationale for my analytic approach. I conducted analyses in a structural equation modeling framework (SEM; Byrne, 2012; Little, 2013) to address the aims of both studies; specifically for Study 1, I employed confirmatory factor analysis (CFA) within the full sample and then a multiple groups CFA across the sample's European-American non-Hispanic and ethnic minority mothers. For Study 2, I specified path models to evaluate latent relations among the primary constructs of the study, guided by the integrative conceptual model (Figure 2).

Confirmatory factor analysis is a preferred technique that allows the researcher to empirically test and evaluate an a priori theory of common factor relations, for example, in this study, validating an established factor structure in a new population. CFA produces multiple opportunities to evaluate model fit, thus it allows for an iterative process of empirical validation of theory because there is flexibility in how the specified model ultimately represents the data at hand (Brown, 2015). Moreover, tests of measurement invariance (also called measurement *equivalence*) are a necessary but under-utilized step in the inquiry of

cross-group comparisons (Vandenberg & Lance, 2000). Multiple groups CFA is a favored technique to test measurement invariance because of its flexibility and range to examine all the different possible types of invariance in a model, for example, loadings, intercepts, and error (Brown, 2015; Little, 2013). By using this technique, I was able to draw conclusions on the applicability and relevance of the central instrument of ethnic-racial socialization in young mothers as a single group as well as across sub-groups of young mothers.

Testing the associative and predictive latent relations (or “paths”) in a SEM framework provides assurance of reduced measurement error in analyses (Byrne, 2012; Little, 2013). SEM is a preferred statistical approach here as it allows the latent constructs—including multiple outcomes—to be examined in one analysis model yet addresses issues of multi-collinearity and measurement error inherent to standard ordinary least squares regression (McDonald & Ho, 2002). Using SEM techniques, latent constructs take into account the reliability of scale items from instruments so measurement error is accounted for separately from the construct of interest; thus by using a modeling framework, I was able to assess parameter estimates that reflected the relations among constructs' true scores (Schumacker & Lomax, 2010; Little, 2013).

Caveats, cautions, and resulting conservatism. This study represented the first study to measure the construct of ethnic-racial socialization in young mothers. When introducing any instrument to a novel population, it is prudent to acknowledge the nascent nature of all aspects of the study; from design, to measurement, to interpretation, and implications. As such, I have taken

considerable precaution in model assessment and in a manner of transparency discuss the following two overarching data concerns I confronted alongside my decisions to treat the issues:

Multivariate normal assumptions. In the present study, departures from multivariate normal data distributions were assumed due to the Likert-response options and univariate nonnormality (i.e. skewness and kurtosis) of key indicators. Indicator variables from multiple measures had Likert response options; of primary importance, the Race Socialization scale (Study 1 and Study 2) and Emotion Regulation Checklist (Study 2) were 6- and 4-point scales respectively in their original format. Many raw indicators also evidenced, to varying degrees, zero-, lower-value, or ceiling-inflated response patterns. While treating Likert items as interval is pervasive across psychological literatures, such treatment is a violation of multivariate normality (Lubke & Muthén, 2004). However, using data simulations, Rhemtulla, Brosseau-Liard and Savalei (2012) have suggested that if continuous normal theory is assumed to underlie the categories inherent to Likert items and a robust maximum likelihood (ML) estimator is used, then indicators with “five to seven categories... will yield acceptable performance” in CFA models (p. 371). For more complex models, Little, Cunningham, Shahar et al. (2002) have recommended using an indicator parceling strategy to extend the range of categorical indicators, especially for those with less than five categories.

Thus, in the two studies I employed multiple strategies to deal with issues of nonnormality. First, I assessed a robust ML estimator across all analyses.

Second, in Study 1 I tested CFAs using indicators that were 6-point Likert items in their original scale, and this provided some assurance that the bias of the covariance matrix being assumed under continuous normal theory was mitigated (Rhemtulla et al, 2012). Additionally, I ran analyses using multiply imputed data, which, as a regular result of the imputation process added between-category values to the indicator distributions, making them more continuous in terms of their mathematical application. Third, in Study 2 where I tested more complex models, I employed a parceling strategy in which two or more indicators⁵ were averaged to form a parcel-indicator. Ultimately, 4-point and 6-point Likert items were first multiply imputed at the item level, creating many more values than the original scale, and then averaged in various ways (see Chapter 5 for details) which further extended the range of the indicators that loaded onto the model latent constructs.

Model estimation using multiply imputed data. As noted above, the employment of MI for the present analyses was advantageous in developing a parceling strategy for Study 2 and in allowing for numerous child and maternal covariates to serve as auxiliary variables to inform data augmentation (Enders, 2010). However, in practice, the use of multiply imputed data has its limitations: one of which is the lack of theoretically sound procedures for pooling model fit statistics across m datasets. Rubin's (1987) classic rules, that is, his recommended procedures for pooling results across m datasets only readily apply to univariate hypotheses tests (e.g., Wald statistics for parameter estimates). In fact, for SEM analyses, Enders only really endorses what he terms the D_3 procedure developed

⁵ with the exception of one construct, *cultural socialization*, which had 3 single-item indicators

by Meng and Rubin (1992) for multiparameter hypotheses tests (e.g., overall fit) whereby a likelihood ratio statistic is computed to account for the average relative increase in variance across m datasets (p. 241). This limitation is also confronted in software; Mplus only recently programmed its model χ^2 for TYPE=IMPUTATION models using the Meng and Rubin procedure—and thus far has only done so for ML estimation. Additionally, for TYPE=IMPUTATION models, Mplus cannot compute pooled modification indices, which inhibits efforts to assess and re-specify models.

As noted above, it was necessary to employ a robust ML due to the departures from normality inherent to the data; yet, currently no viable straightforward means exist by which to assess model fit when using multiply imputed data. Moreover, the D_3 statistic in ML estimated models that is available when using multiply imputed data must be interpreted “with some caution” (Enders, 2010, p. 251) and the extent to which it is biased in the presence of departures from normality is unknown. To gain information on the model fit statistics and access modification indices, I employed a supermatrix technique across all analyses. Lang and Little (2013) have demonstrated in a simulation study that a supermatrix technique produced unbiased likelihood ratio statistics for models using multiply imputed data, which subsequently then allowed for nested model χ^2 testing. In Mplus the supermatrix technique is used in a typical TYPE= CORRELATION MEANS STDEVIATIONS model, whereby the input correlation matrix is a Pearson's product moment correlation table for a “stacked” $mN \times p$ (imputations*original sample size*# of variables) data frame and the

NOBSERVATIONS is “explicitly set to the original sample size N [a] constraint [which] adjusts the likelihood ratio statistics to correct for the spurious inflation of sample size entailed in treating the stacked m imputed data sets as a single data frame” (p. 462). Thus, for example, the Study 1 supermatrix data frame was $100*468*15 = 702,000$ variables belonging to 468 cases.

Having the supermatrix-based statistics assisted in obtaining a means to assess unbiased model fit under ML estimation and revealed standardized residuals, modification indices, and expected parameter change (EPC) values for all models under scrutiny. However, as outlined in Table 2, throughout all analyses I relied on parallel assessment and comparison of all three estimation techniques; ML, ML_supermatrix, and robust ML, given their various strengths, limitations, and availability in the Mplus output (see left half of table). Ultimately, given the comparisons across estimation techniques, I decided upon a reporting strategy for each analysis which is summarized on the right half of the table. For the most part, parameter estimates (e.g. factor loadings, regression coefficients, covariance values) were identical across the three types of estimation. For each question if the standard errors were similar between ML and robust ML (i.e. differences were not $>|.002|$), then I report ML results. In terms of multivariate tests of hypotheses, I report the supermatrix-based statistics for ease of interpretation. Though ideal, I could not in good faith present a Satorra-Bentler adjusted χ^2 (S-B χ^2); given that the robust χ^2 presented in Mplus for

TYPE=IMPUTATION is not theoretically valid, I *could not* calculate a legitimate adjusted χ^2 .⁶

Overview of Analyses

Models tested in Study 1 maintained emphasis on indicator-level data throughout the CFA and multiple groups CFA. I specified the measurement models following the recommendations of Brown (2015) and Little (2013). To evaluate models I checked for an overall goodness of fit (or, rather, degree of lack of fit), evidence of local lack of fit, and then the interpretation of parameter estimates. First, I assessed the commonly recommended indices of global fit: model χ^2 , SRMR and RMSEA absolute fit indices, CFI and TLI relative fit indices, and others as recommended (Brown, 2015; Little, 2013). Given that information, I also examined the fitted residual matrices to see how well the variance-covariance matrix was reproduced by the parameter estimates and the modification indices to note any significantly large gains to be had in model χ^2 should a parameter be freed. Lastly, I considered the statistical and substantive alignment of the parameter estimates; first by checking for magnitude and boundedness of the estimates, and then by checking that the estimate was in the expected direction. I compared models using the χ^2 difference tests referencing the results gained by the ML supermatrix technique.

Models tested in Study 2 maintained emphasis on relations at the latent construct level. I tested structural models, that is, the latent regression analyses, using the protocols of Byrne (2012) and Little (2013). Of note, for this study, I

⁶ However, I did calculate S-B adjusted χ^2 based on the average robust χ^2 provided and, though unsubstantiated, when compared in nested models difference tests, these robust χ^2 s supported the results of model comparisons reported herein.

employed a strategy of parceling indicators in the measurement portion of the SEMs (i.e., I combined indicators by averaging them in a pre-processing module). This strategy offered multiple benefits, including gains in estimation efficiency due to smaller variance-covariance matrices and greater reliability of the constructs' indicators due to the exponential reduction of residual error in combined terms (Little, Rhemtulla, Gibson, et al, 2013; Matsunaga, 2008). Information from the single-group CFA in Study 1 and additional CFAs of the three child outcome variables informed the method by which I constructed parcels. I first prioritized combining indicators with correlated residuals (Little et al, 2002) then proceeded with a "factorial algorithm", (or, what Little and colleagues refer to as a "balancing technique"), in which factor loadings are ranked and paired low loading with high loading until the parcel is complete (Matsunaga, 2008).

In my model building strategy I first tested a measurement model, then specified the respective theorized model, and then adjusted the model as deemed justified and substantively meaningful. Eventually I pruned nonsignificant paths one-by-one until arrival at a final parsimonious model. I assessed acceptable fit by the SRMR, RMSEA, CFI, and TLI indices, then subjected nested models to a χ^2 difference test.

CHAPTER FOUR

MEASUREMENT STUDY: VALIDATING ETHNIC-RACIAL SOCIALIZATION IN A NOVEL SAMPLE OF YOUNG MOTHERS

Background

This first study represented an effort to validate the application of an ethnic-racial socialization instrument in this novel, diverse sample of young mothers. The instrument administered in the MHFE-2EC T4 protocol was the Race Socialization scale developed by Diane Hughes and colleagues (Hughes & Chen, 1997; Hughes & Dumont, 1993) and I describe its properties, development, and history of use below.

Hughes and Chen 1997 Race Socialization Scale

The Hughes and Chen Race Socialization scale was first introduced to the ethnic-racial socialization literature in *Applied Developmental Science* in a study which aimed to “[describe] dimensions of racial socialization...[and] examine factors that might account for differences in parents’ race-related messages to their children” (Hughes & Chen, 1997, p. 211). The scale—as administered to the sample—consisted of 16 total items intended to capture parents’ “behaviors that transmit attitudes, values, and information regarding their racial group memberships and intergroup relationships to children” (p. 202). The authors intended the items to underscore three prominent themes of the literature to-date: cultural socialization (5 items), preparation for bias (9 items), and promotion of mistrust (2 items). Response options on the scale first included an overall endorsement of the behavior, e.g., “have you ever [behavior], yes or no?”; if yes,

options next included a frequency of endorsement over the past year. Although the scale was first analyzed in the Hughes and Chen study, its development took place in research for the MacArthur Research Network on Successful Midlife Development.

Development of scale items. The Race Socialization instrument was derived from previous work using community-based focus groups. Hughes and Dumont (1993) conducted 6 focus group interviews in a sample comprised of 43 African American parents from dual-earner households in the New York metro area. The Hughes and Dumont study featured a conceptual framework based on how occupational cultures are reflected in parenting practices: the authors sought to examine how exposure to racial stressors at work might influence parents' use of racial socialization messages with their children. Thus, the focus groups centered on understanding parents' perspectives of race and, in turn, specifically how race affected their parenting. The authors employed pattern coding to interview transcripts and developed an initial survey based on the emergent themes. The authors then had the focus group participants review the surveys, after which they altered language and content in response to group feedback.

Methods employed in the Hughes and Chen study. Situated in Chicago, the Hughes and Chen (1997) study assessed the Race Socialization scale in another sample of African American parents ($N = 157$) who were married and in dual-earner households. Children of respondents ranged in age from 4 to 14 years old, and in fact, the authors detailed in a footnote that age was restricted to this range after a number of considerations. The first consideration was that the

authors anticipated children in this range to be the “most likely targets” of these communications. The authors also noted that consideration of children younger than 4 years of age risked children not having racial awareness or “the ability to categorize by racial group” while consideration of children older than 14 risked children having “already consolidated ethnic identities and orientations” (p. 204).

In the item level analyses, the authors reported endorsement frequencies representing lifetime endorsement (“*ever*”) and substantial past year endorsement (“*often* or *very often* in the past year”). Results revealed that while overall endorsement of individual items was relatively common, the authors noted that only a small proportion of parents endorsed using these behaviors frequently within the past year and most prevalently endorsed items intended to measure cultural socialization.

Next they employed a principal axes factor analysis (PAF), specifying a varimax rotation, to assess the latent dimensions of the scale. Their results revealed that the three intended factors were captured in the scale; cultural socialization was measured by 3 items and captured 12.6% of the scale variance, preparation for bias was measured by 7 items and captured 46.8% of the scale variance, and promotion of mistrust was measured by its original 2 items and it explained 7.0% of the scale variance. All three factors indicated acceptable reliability. Ultimately, the authors chose to dismiss 4 original items from analyses due to double loading or weak loadings within the factor structure “to increase interpretability and parsimony” (p. 205). As shown in the study’s bivariate results,

the factors had statistically significant positive correlations with one another ($r_{CS:PFB} = .52$; $r_{CS:PM} = .33$; $r_{PFB:PM} = .59$).

Subsequent use of the scale. Since the Hughes and Chen (1997) study, the Race Socialization scale has been used and adapted for multiple research endeavors examining ethnic-racial socialization. A brief history of its use is summarized in Table 3, where samples' characteristics and the analytic techniques used to derive the cultural socialization and preparation for bias factors are highlighted across columns. First, it is noteworthy that this scale, which is based on the experiences of African American parents, has been adapted for parental report across other ethnic groups as well as child report across a range of different ethnic groups. Hughes (2003) was the first study to use accommodating language at the item level in order to make group comparisons across African American, Dominican, and Puerto Rican parents. Likewise, Hughes, Bachman, et al. (2006a) appropriated the language and response scale for child report by simplifying item words as well as limiting the response options to three responses, that is, "*never*", "*sometimes*", and "*a lot of times*".

Second, because the study of ethnic-racial socialization has largely been conceptualized as an adaptive process for ethnic minority families, it is noteworthy that this scale has been used with European origin families: Hughes et al. (2006a) introduced the scale to a diverse multi-ethnic sample which included European-American as well as Russian immigrant families. The authors viewed the inclusion as "an important new direction" (p. 601) due to the fact that these groups had had little representation in the literature. While no study has thus far

focused solely on families of European origin, other studies have followed suite and included European-American participants in their analyses. On the other hand, in a later study Hughes, Hagelskamp, Way et al. (2009a) excluded families of European origin from analyses explicitly citing that there was “little basis in the literature for combining European American with ethnic minority youth when exploring issues related to ethnicity and race” (p. 610).

Moreover, it is noteworthy that with a lone exception, all studies have employed exploratory techniques to derive factors for use in predictive models. Whereas Hughes and Chen (1997) used PAF, other studies employed principal components analyses (PCA), while others still relied on previous work to create summary scores from theorized subscales. This has resulted in similar factors across studies, but nonetheless factor analysis and principal component analysis stem from distinct empirical objectives (Brown, 2015) and in this particular series has resulted in many different configurations of measurement at the item level across studies.

In the one study that used a confirmatory technique (Hughes et al., 2009a), the authors conducted multiple group CFAs among a sample of African American ($n = 62$), Latino ($n = 50$), and Chinese ($n = 58$) parent and adolescent dyads. Though the sub-group samples were small, the CFAs revealed acceptable fit of a 2-factor model in which cultural socialization and preparation for bias were each measured by 4 items (though items were not disclosed). Further equivalence tests established a weak factorial invariance in which groups' factor loadings were

statistically equivalent to one another. The factors were then used in a set of ordinary least squares regression models.

Building upon the Empirical Base of the Race Socialization Scale

As detailed above and summarized in Table 3, the Race Socialization scale has been a central feature of a diverse series of empirical studies. In introducing and assessing this scale in a novel, diverse sample of young mothers, this study undertook multiple methodological considerations.

Extending theory and empirical tests to new groups. Thus far, researchers have trended toward applying theory and empirical tests examining ethnic-racial socialization to multiple ethnic groups, including groups historically privileged in the U.S. racial hierarchy. When participants of European origin have been included in studies, results have been mixed and unexpected; especially in those studies that examine child report of ethnic-racial socialization. For instance, in examining associations between ethnic-racial socialization and youth outcomes, Hughes et al. (2009b) hypothesized that African American youth would have stronger associations across paths than White youth; yet their results revealed structurally equivalent models between the groups and that it was White youth who on average had stronger associations among constructs. However, in both the above study and Rivas-Drake et al. (2009), ethnic minority youth consistently reported higher “dosages” of parental messages regarding culture, ethnicity, and race than their European origin peers. Thus, in introducing and assessing the Race Socialization scale in a novel, diverse sample of young

mothers, judicious examination of the instrument must take place both *across* groups and *between* groups.

Extending exploratory methods. Thus far, scholars have used exploratory techniques to derive factors representing cultural socialization and preparation for bias. Implicitly, studies that have employed these techniques have stated a number of necessary assumptions regarding measurement. For example, in using PCA one assumes that responses on items have perfect reliability, and as such, this technique places 1.0s on the variance portion (i.e., the diagonal) of the input correlation matrix. (Thompson (2004) quipped this is due to the fact that scores should perfectly correlate with the same scores of the same item). However, should scores have less than perfect reliability—which in applied social response data is highly likely—variance terms should be less than 1.0 (Thompson, 2004, p. 27). Including its original derivation, the other technique used with the Hughes and Chen scale has been a PAF. This technique does attempt to address some of the limiting assumptions of PCA. In PAF, one first conducts a PCA, after which the resulting communality coefficients replace the variance input (i.e., the diagonal of the correlation matrix). The researcher then conducts a subsequent factor analysis that takes into account some of the error found in the response items (Thompson, 2004).

These two techniques are omnipresent in the psychological literatures and researchers typically employ them in order to produce factors (or components) that represent latent dimensions of a series of scale items.⁷ However, a

⁷ Of import, Brown (2015) and others highlight the debate surrounding the use of PCA as a methodological technique to support research objectives regarding a common factor model.

confirmatory technique is a preferred statistical approach for tests of common factor measurement when a robust theory has been established (Little, 2013) and especially preferred when an empirical base has suggested specific interrelations of scale items (Brown, 2015; Little, 2013). Thus, given the rich theoretical and conceptual basis for the phenomenon of ethnic-racial socialization and the empirical literature using the Hughes and Chen instrument, I reasoned that the precedent for a confirmatory approach had been established. Accordingly, I sought to test the Hughes and Chen (1997) Race Socialization scale in the MHFE-2EC sample using a confirmatory approach for two lines of inquiry, which I detail alongside my hypotheses as follows:

Factorial Validity of Ethnic-Racial Socialization in Young Mothers

The first test of this measurement study sought to determine whether behaviors endorsed across the full MHFE-2EC sample would reflect and replicate the dominant themes of *cultural socialization* and *preparation for bias* that have been consistently captured as factors across single- and multi-group studies (Hughes & Chen, 1997; Hughes, 2003). Given the strong conceptual and empirical base for the existence of these factors, I hypothesized that a 2-factor model representing *cultural socialization* and *preparation for bias* would be

While there are practical reasons for the use of PCA as a factor analysis (including that program solutions between PCA and EFA are often very similar); PCA is not a common factor analysis. As Brown summarizes, "PCA does not differentiate common and unique variance. Instead, PCA aims to account for the *variance* in the observed measures rather than explain the *correlation* among them. Thus PCA is more appropriately used as a data reduction technique to reduce a larger set of measures to a smaller, more manageable number of composite variables for use in subsequent analyses... if the overriding rationale and empirical objectives of an analysis are in accord with the common factor model, then it is conceptually and mathematically inconsistent to conduct PCA; that is EFA is more appropriate if the stated objective is to reproduce the intercorrelations of a set of indicators with a smaller number of latent dimensions, recognizing the existence of measurement error in the observed measures" (p. 20).

validated in young mothers when replicating the Hughes and Chen (1997) Race Socialization scale in the full MHFE-2EC sample.⁸ However, given this study (a) represented the first to measure these factors in young mothers and (b) was examining a multi-ethnic sample, I considered departures from previous factors at the indicator level as both plausible and appropriate. For instance, CFA allows for flexibility in specifying *how* measurement error occurs in administering an instrument; and as such, I hypothesized a plausible error theory in which items with similar wording and/or content would share some residual error. Additionally, I held reservations on the between-group validity of item pfb5 (see descriptions in Tables 4 and 5) that had been flagged as problematic in administration of the instrument. During MHFE-2EC data collection, staff observed that European origin mothers were confused by how they were supposed to answer the pfb5 item. This was evident when preliminary data indicated that not one European origin mother endorsed item pfb5, (resulting in zero variance across this subgroup). I fully explicate these measurement error concerns in the results.

Measurement Equivalence between Ethnic/Racial Minority and European-American Mothers

Importantly, this study also sought to examine if factors found at the sample level were equivalently measured across subgroups, here racial/ethnic groups with respect to a racialized social hierarchy. Examination of this

⁸ The Hughes and Chen scale originally included 16 items, 2 of which loaded onto the factor *promotion of mistrust*. This dimension of ethnic-racial socialization is not examined in this study nor were the 2 items included in the MHFE-2EC protocol, as such the full scale considered in this study includes the original 14 items capturing *cultural socialization* and *preparation for bias*.

measurement is rare in many psychological literatures (Vandenberg & Lance, 2000), but represents a critical step in anticipation of future work conducting group comparison studies as well as the validity of examining populations as a single group (Gregorich, 2006). In the ethnic-racial socialization literature there has been a lack of empirical evidence to support that such a measure will or will not be equivalent across racial/ethnic groups. However, guiding conceptual frameworks point to discrimination and race as salient features of ethnic/racial minority experiences (García Coll, et al., 1996; Mistry & Wu, 2010; Murry et al., 2001) suggesting the interpretability and reflection of certain indicators in the Race Socialization scale may meaningfully differ across groups. Accordingly, if these differences were not accounted for it would be difficult to determine measurement equivalence across groups. As such, I maintained a working hypothesis that weak partial factorial invariance of a 2-factor model was plausible between groups; that is, the factor structure (commonly called form) would be similar between groups and, *for the most part*, the factor loadings measuring *cultural socialization* and *preparation for bias* would be equivalent between groups. Constraints specified in partial invariance models allow for limited departures in indicator parameters due to conditions such as the difference in the interpreted meaning of certain indicators.

Methods

Data for this study were collected primarily in the MHFE-2EC T4 protocol. The MHFE-2 evaluation, described in greater detail in Chapter 3,

employed a mixed-methods longitudinal design. For this study, I assessed a series of cross-sectional measurement models using T4 quantitative data.

Procedure

The complete T4 at-home protocol comprised a semi-structured interview which was interspersed with a series of measures that ranged in thematic content (e.g., attachment style, interpersonal violence, parenting stress). Overview of MHFE-2EC procedures is described in Chapter 3. Specific to this study, the 14 items intended to assess mothers' early ethnic-racial socialization behaviors were included as part of a 23-item measure in the T4 at-home protocol (see Appendix). This measure took approximately 4 minutes to administer. Participants were provided the option of completing each measure on a portable tablet or on paper by themselves, with the Tufts researcher, or by a combination of self-response and interviewer-assisted response. At the beginning of each measure, interviewers reminded participants that their responses were both voluntary and confidential and provided instructions for intentional non-response.

Participants

The following analyses examined data from all consented mothers ($N = 468$) who participated in the T4 protocol of MHFE-2EC. Table 1 displays demographic and background sample characteristics. Mothers were on average, 23.7 years of age ($SD = 1.34$) at time of interview. Approximately 60% were currently employed and 22% were currently in school at time of interview. Nearly 85% of mothers had obtained their high school diploma and over 40% had gone on to pursue post-secondary education. Nearly half of the mothers co-parented

their child/ren with a partner; 12% were married, and 56% were single. Mothers had, on average, 1.6 children at T4. The sample was geographically and ethnically/racially representative of young mothers across Massachusetts.

Measures (*in order of analysis*)

Early ethnic-racial socialization behaviors comprised two themes dominant in the extant literature: *cultural socialization* and *preparation for bias* (Hughes et al., 2006b). In this study I examined exclusively the indicator-level properties of the original Hughes and Chen (1997) Race Socialization scale. As reviewed above, the scale was originally used in an African American sample, however Hughes (2003) appropriated items for use across three ethnic groups; thus the items administered in the MHFE-2EC sample originated from the Hughes and Chen scale but reflected the language accommodation used in the 2003 multi-group study. Additionally, in order to test whether the measurement of the scale was invariant between European-American and ethnic minority respondents, this study also considered ethnicity of mothers.

Cultural socialization. All 5 items originally intended to measure cultural socialization in the Hughes and Chen (1997) scale were included in the T4 protocol. Prompts included a list of activities pertaining to a child's cultural heritage, for example, "taken my child to an event that celebrates or recognizes my child's cultural heritage group". Mothers first indicated "yes" or "no" if they had ever engaged in the item behavior; if "yes" respondents then indicated how often in the past year they had engaged in the behavior (*Never, Rarely,*

Sometimes, Fairly Often, or Very Often). Items were then coded on a 6-point scale in the same manner as the original scale (0=*No, not ever* to 5= *Very Often*).

Preparation for bias. All 9 items originally intended to capture the construct of *preparation for bias* in the Hughes and Chen (1997) scale were included in the T4 protocol. Prompts included a list of messages and communications more specific to the treatment of a child's ethnic/racial group than to her/his cultural heritage at-large, for example, "explained to my child something s/he saw on TV that showed poor treatment of people from her/his race/ethnicity". Mothers first indicated "yes" or "no" if they had ever engaged in the item behavior; if "yes" respondents then indicated how often in the past year they had engaged in the behavior (*Never, Rarely, Sometimes, Fairly Often, or Very Often*). Items were coded on the 6-point scale described above.

Ethnic minority. Participants self-reported their race/ethnicity at study baseline by endorsing any applicable options: *Hispanic/Latina, American Indian/Native American/ Alaska Native, East Asian, South Asian, Native Hawaiian or Other Pacific Islander, Black or African American, White, and/or Other*. Aligned with the U.S. Census and standards of the National Institutes of Health, responses were coded into 4 mutually exclusive racial/ethnic groups (see Table 1). The race/ethnicity groups were then collapsed so that mothers who self-identified as African American/Black non-Hispanic, Hispanic, or Multi-/Asian/Other non-Hispanic were coded as 1 to represent an ethnic minority "status" and mothers who self-identified as European-American non-Hispanic only were recoded as 0.

Analysis and Results

The first goal of this study was to test the fit of a 2-factor model using indicators from the Hughes and Chen (1997) Race Socialization scale while accounting for a plausible error theory in the MHFE-2EC sample. Utilizing a confirmatory framework, the tests of fit proceeded in two lines of analysis; first I sought to test the final 2-factor, 10-indicator configuration used in the 1997 study analyses and second, I sought to test the original full 14-indicator scale. I expected that a 2-factor model representing *cultural socialization* and *preparation for bias* would be validated in the MHFE-2EC sample of young mothers: however, given this study represented the first to measure these constructs in young mothers and examined multiple racial/ethnic groups, I expected departures from the Hughes and Chen factors at the indicator level would be plausible, if not appropriate.

The second goal of this study was to assess the equivalence of measuring the early ethnic-racial socialization behaviors between ethnic minority and European-American mothers. Although there has been a lack of empirical evidence to support that such a measure will or will not be equivalent between ethnic minority and European-American mothers, I expected that, at minimum, partial measurement equivalence across factor loadings was plausible between groups.

Exploratory Replication of the Race Socialization Scale

To undergird the viability of a CFA, I conducted preliminary analyses of the sample. As noted above, in effort to produce scale scores for various studies'

analyses the Race Socialization scale has most commonly been subjected to either a PAF analysis or a PCA, most typically with varimax factor rotation.

Additionally, indicators of reliability across studies for the factors and components have been high: Cronbach's alpha for items measuring *cultural socialization* have ranged from $\alpha = 0.72$ for 5 items (Caughy & Owen, 2014) to $\alpha = 0.87$ for 5 items (Hughes, 2003) and Cronbach's alpha for items measuring *preparation for bias* have ranged from $\alpha = 0.72$ for 3 items (Hughes et al. 2006a) to $\alpha = 0.91$ for 7 items (Hughes & Chen, 1997).

In an effort to replicate the treatment of the Race Socialization scale across other studies (e.g., Hughes, 2003; Hughes & Johnson, 2001; Hughes et al. 2009b), I examined preliminary data from approximately 60% of the study sample ($n = 289$) in a PCA, employing both varimax and oblique factor rotations. I employed a PCA with the additional oblique rotation to account for documented associations between the two constructs. Additionally of note, a sixth preliminary *cultural socialization* item was included in the PCA that was not part of the original race socialization scale, that is, "said or done things to encourage my child to be proud of her/his cultural heritage". Table 4 presents the standardized component loadings. Results suggested reliability and validity of the 2-factor structure in the young mother sample was plausible; first, Cronbach's alpha indicated high internal consistency for both *cultural socialization* ($\alpha = 0.79$ for 6 items) and *preparation for bias* ($\alpha = 0.75$ for 9 items). Replicating Hughes' (2003) use of the instrument, the results of the PCAs indicated two components explained 42.1% of the scale's variance; however, of note, the item "talked to my

child about racial/ethnic differences with her/his physical features or others' physical features" loaded more strongly on the *cultural socialization* component than on the *preparation for bias* component in both the varimax and oblique rotations. This loading was different from prior studies, but not surprising given the data-driven, exploratory nature of the PCA technique.

Descriptive Results

Table 5 displays the proportion of mothers who endorsed each of the 14 items in the full sample. Overall endorsement—that is, in terms of a respondent “ever” enacting an early ethnic-racial socialization behavior—varied substantially from just over 12% of the sample (“told my child that other people might try to limit her/him because of her/his race/ethnicity”) to just over 70% of the sample (“talked to my child about racial/ethnic differences with her/his physical features”). The mean proportion of overall endorsement across the 14 items was 40% of the sample. Similar to the results in the original Hughes and Chen study, frequent engagement was much less prevalent in this sample of young mothers than overall endorsement: there was a low proportion of mothers who endorsed each of the 14 items “often” or “very often” in the past year ($M = 10.4\%$, Range 0.7% to 27.3%). Items intended to measure *cultural socialization* ($M = 50.1\%$) had a higher average proportion of overall endorsement than items intended to measure *preparation for bias* ($M = 34.7\%$) and this difference was statistically significant ($z = 4.77, p < .001$). Likewise, items intended to measure *cultural socialization* ($M = 13.4\%$) had a higher average proportion of frequent

engagement than items intended to measure *preparation for bias* ($M = 8.8\%$), which was also a statistically significant difference ($z = 2.24, p < .05$).

Table 6 presents item-level means, standard deviations, and Pearson's correlations. All item pairs had statistically significant correlations. Univariate normality tests of the items indicated that most items were acceptable in terms of skewness and kurtosis (i.e., values were within the range of ± 2 in respective tests): however three items evidenced a large positive skew (Range: 2.78-3.04), reflective of the inflation of lower and zero values in the response distribution; and four items (three inclusive of the skewness list) evidenced a large positive kurtosis (Range: 3.75-12.85) indicating that the response distributions had a shape flatter than a normal distribution.

Validating the Final Factors of the Hughes and Chen (1997) Study

Based on the final factor structure used in the Hughes and Chen (1997) study analyses, I specified a 2-factor, 10-indicator model, in which 3 manifest indicators, "told my child stories or read my child story books involving characters who shared my child's race/ethnicity or 'looked like' my child", "taken my child to an event that celebrates or recognizes my child's cultural heritage", and "told or read child stories about the history of her/his racial/ethnic group" loaded onto the latent variable *cultural socialization*; and 7 manifest indicators, "talked about race/ethnicity with someone else when my child could hear", "explained to my child something s/he saw on TV that showed poor treatment of people from her/his race/ethnicity", "talked to my child about the fight for equality among people of her/his race/ethnicity", "indicated to my child that s/he

has to behave better and do better than White kids to get the same respect or rewards”, “talked with my child about discrimination of people based on things like skin color, accent, or traditional clothing”, “told my child that other people might treat her/him differently or badly because of her/his race/ethnicity”, and lastly, “told my child that other people might try to limit her/him because of her/his race/ethnicity” loaded onto the latent variable *preparation for bias*.

In the original study the results revealed two indicators (cs6 and pfb9) that double-loaded onto the two factors in the PAF analysis, and because those indicators went unused in the final study analyses, I did not include them here. As in the original study, in this study I used a congeneric loading schema, that is, I did not specify any indicators to double-load on either factor. Additionally, I did not include two indicators (cs4 and pfb1) here that went unused in the original study because they did not load at a minimum criteria set by the authors.

Throughout the CFA models, I used a fixed factor method to set the scale of the latent variables whereby I fixed each factor variance at 1.0.⁹ Based on previous studies, including the original study, indicating a moderate positive correlation (Pearson's $r > 0.50$) between these constructs (Hughes & Chen, 1997; Hughes & Johnson, 2001), I freely estimated the covariance between *cultural socialization* and *preparation for bias* throughout analyses.

⁹ Latent variables are not directly measured and thus do not have an inherent or prescribed scale. A primary task of the researcher is to set the scale of the latent variable. In the CFA literature there are three primary methods by which to do so; *marker variable* method, *fixed factor* method, and the *nonarbitrary* method (Brown, 2015). I used the fixed factor method throughout Study 1 and Study 2 analyses (except when noted in tests of strong factorial invariance) because interpreting parameters focused on the completely standardized solution. Brown suggests that for such a focus the fixed factor method may be considered superior to the marker variable approach (p. 54).

I tested and analyzed models in Mplus version 7.2 (Muthén & Muthén, 1998-2014) using three estimation methods. Due to the appearance of platykurtic distributions at the univariate level for certain indicators, I used both ML and a robust ML estimation to compare the standard errors of parameter estimates. Typically, with non-normal multivariate data distributions there lies risk of inflated Type I error rate, in which parameters' standard errors are underestimated in ML; however in this study, the nature of the kurtosis may have caused overestimation of the standard errors whereby robust ML provided smaller standard errors. This was evident in the comparison; however, there were scarce meaningful differences in standard errors, indicating ML was robust to the departures of normality present among the indicators. As expected there were no differences in the resulting parameter estimates for models estimated by ML and robust ML; as such, the indicator- and factor-level results reported here represent results using the ML estimation.

As described in Chapter 3, for multi-parameter hypotheses tests such as the χ^2 and χ^2 difference tests, I supplemented ML estimation with a supermatrix technique (MLsm, Lang & Little, 2013) to correct for documented biases in the model likelihood ratio statistic that are, obtained when using multiply imputed data. I examined overall model statistic results and comparisons across ML, MLsm, and robust ML to ensure cohesive properties, but ultimately here I report multiparameter tests using the unbiased MLsm results.

To assess CFA model fit I followed the recommendations of fit criteria common in replication literatures: multiple indices guided statistical evaluation of

fit which was ultimately paired with substantive evaluation of models. Standard assessment included absolute, local, and comparative indices: the standardized root mean square residual (SRMR), the root mean square error and its 90% confidence interval (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI, also referred to as the non-normed fit index). Criteria for “acceptable” and “close” fit were based on the recommendations of Little (2013): SRMR (≤ 0.08 ; ≤ 0.05), RMSEA (≤ 0.08 ; ≤ 0.05), CFI (≥ 0.90 ; ≥ 0.95), and TLI (≥ 0.90 ; ≥ 0.95).

The model building strategy to replicate the original Hughes and Chen (1997) final study factors involved testing a series of CFAs that adjusted specification for error theory as well as substantive concerns given the study sample. Table 7 provides the model comparisons. In the first model, I did not estimate any residual covariances, as was inherent to the original analyses; and as anticipated, this model lacked acceptable fit. Next I fit a model to incorporate my full error theory given the characteristics of the sample and design differences between the two studies. As such, the error theory tested the plausibility that indicator pairs cs2:cs5, pfb7:pfb8, pfb7:pfb5, and pfb8:pfb5 would have correlated residuals due to similar wording and content (the strongest such predicted relation being pfb7:pfb8). This full error theory model had acceptable fit $\chi^2_{(df=30, N=468)} = 99.700, p < .001$, SRMR = 0.039, RMSEA = .070 (.055; .086), CFI = .950, TLI = .926. However upon reviewing the parameter estimates, a nonsignificant correlated residual between cs2:cs5 indicated local mis-specification (or, arguably, over-specification), thus I re-specified the model to fix

the nonsignificant correlated residual to 0.0.¹⁰ Table 7 shows the model with the adjusted error theory fit the data well $\chi^2_{(df=31, N=468)} = 102.358, p < .001, SRMR = 0.041, RMSEA = .070 (.055; .085), CFI = .949, TLI = .926,$ and a $\Delta\chi^2$ test indicated this more restricted model should be retained $\Delta\chi^2 = 2.658, \Delta df = 1, p = ns.$

Introducing the Hughes and Chen (1997) scale to a diverse, young mother sample included substantive concern regarding the content of the pfb5 indicator in particular, which reads, “indicated to my child that s/he has to behave better and do better than White kids to get the same respect or rewards”. Recall that Hughes and Chen, as described above, studied a single racial group (African American families) and as such were able to include this item wherein parents provide their children direct comparison to children of White families. Whereas this explicit comparison has legitimate grounds in that single group sample, in the present multi-group sample that includes European-American/White families, this question was met with confusion and concern by some respondents. In fact, in the raw data not a single European-American mother endorsed this item meaning its variance in this subgroup was 0.

Therefore, I chose to re-specify the adjusted error theory model by omitting the problematic pfb5 indicator; that is I specified a 2-factor, 9-indicator model in which 3 manifest indicators loaded onto *cultural socialization* and 6 manifest indicators loaded onto *preparation for bias*. In parallel fashion to the 10-

¹⁰ Modification indices also alluded to a high EPC provided a re-specification that included a correlated residual between pfb3 and pfb4; however there was no substantive grounds for freeing that parameter and doing so may concede to capitalizing on sample error (Brown, 2015). As such, the parameter remained fixed at 0.0 throughout analyses but this information was considered in developing the parceling strategy for Study 2.

indicator CFAs, I first specified a measurement model in which no residual covariances were estimated; and again as expected, this model lacked acceptable fit. Next I re-specified the model to incorporate the adjusted error theory from the 10-indicator model in which a correlated residual between pfb7:pfb8 was freely estimated. This model fit the data well $\chi^2_{(df=25, N=468)} = 88.453, p < .001, SRMR = 0.040, RMSEA = .074 (.057; .091), CFI = .949, TLI = .927$. Provided the substantive alignment as well as the non-nested statistical comparison to the 10-indicator model ($\Delta AIC_{9:10} = -1046.29$), I retained this 9-indicator model as the best fit model.

Validating the Original Full Hughes and Chen (1997) Scale

Based on the original full scale used in the Hughes and Chen (1997) study, I specified a 2-factor, 14-indicator model, in which two additional manifest indicators, that is, “purchased clothing for my child that was popular in her/his cultural group, or, taken my child to get a hairstyle popular in her/his cultural group” and “done something to celebrate history of my child’s racial/ethnic group” loaded onto the latent variable *cultural socialization*; and two additional manifest indicators, that is, “talked to my child about racial/ethnic differences with her/his physical features or others’ physical features” and “talked to my child or corrected something s/he mis-learned in school about her/his race/ethnicity” loaded onto the latent variable *preparation for bias*.

The procedures for congeneric loading schema, scaling the latent variable with a fixed factor methods, freely estimating the factor covariance, and a comparison of three estimation approaches mirrored the 10- and 9-indicator

models above. I again assessed model fit using multiple indices; chi-square, SRMR, RMSEA, CFI, and the TLI/NNFI.

In parallel to the series described above, I first specified a baseline model with no covariance among indicator residuals; and as expected, results indicated the baseline model lacked acceptable fit (Table 7). Next, I re-specified the model to include my full error theory: here, in the 14-indicator model, I maintained an error theory consistent with that of the 10- and 9-indicator models wherein I freely estimated an additional correlated residual between cs3:cs6 due to similar content regarding events (Brown, 2015, p. 161). Given the results of the previous series, I specified the full error theory, but expected to adjust for a nonsignificant correlated residual between cs2:cs5. Results from the full error theory model suggested mediocre local fit but acceptable absolute fit $\chi^2_{(df=71, N=468)} = 277.391$, $p < .001$, SRMR = 0.054, RMSEA = .079 (.068; .089), CFI = .900, TLI = .871 and a significant improvement over the more restricted baseline model ($\Delta\chi^2 = 322.50$, $\Delta df = 5$, $p < .001$). I next removed the nonsignificant correlated residual between cs2:cs5 for an adjusted error theory model. The adjusted error theory model had nearly the exact fit as the full error theory model; and a $\Delta\chi^2$ test upheld this more restricted model should be retained $\Delta\chi^2 = 0.00$, $\Delta df = 1$, $p = ns$.

Despite the mediocre model fit, I continued to pursue re-specification for substantive concerns as was employed in the previous CFA series. Again, the main concern was the interpretation and limiting response option for particular groups on item pfb5. As such, I re-specified the model removing the problematic pfb5 indicator. I fit a baseline model with no residual covariances, and as

expected, it did not have acceptable fit. I next fit a 13-indicator full error theory model and an adjusted error theory model; and results again indicated a mix of mediocre and acceptable model fit. The best fitting 13-indicator model was again the adjusted error theory model, $\chi^2_{(df=62, N=468)} = 247.951, p < .001, SRMR = 0.053, RMSEA = .080 (.070; .091), CFI = .901, TLI = .876$, which was a closer fit to the data than the 14-indicator adjusted error theory model ($\Delta AIC_{13:14} = -1045.44$).

Final Two-Factor Model for Analyses

As a result of testing alternative CFA models, I chose a final 2-factor model to guide the rest of this dissertation's analyses. I evaluated and compared the best fitting models of the 9-indicator and the 13-indicator CFA series via statistical and substantive considerations. Statistically, a non-nested model comparison greatly favored the 9-indicator adjusted error theory model over the 13-indicator adjusted error theory model, $\Delta AIC_{9:13} = -6402.655$. Additionally the model fit indices for the 9-indicator adjusted error theory model all indicated acceptable or close fit to the data (although, the upper end of the 90% CI range for the RMSEA was outside the acceptable range and thus I failed to fully reject the test of acceptable fit $H_0: RMSEA = .08$). The same degree of fit was not indicated by the 13-indicator adjusted error theory model.

Substantively, I favored the ability to align more closely to the Hughes and Chen (1997) analyses over including the additional indicators. Moreover, there was room for pause regarding the content of cs4 and pfb9, which were not included in the 9-indicator model: more specifically, the activities in cs4 were

likely more attainable for the two-income households of the original study than for young mothers in the present sample. In regards to pfb9, it was unclear whether or not mothers interpreted “school” uniformly for preschoolers and kindergartners. Taken altogether, I continued with analyses using the final 2-factor, 9-indicator adjusted error theory model.

Figure 3 depicts the best fit 2-factor model and includes its standardized parameter estimates. (Table 8 provides raw metric parameter estimates). As noted, all factor loadings were of substantial magnitude (range of γ 's .42 - .81) and statistically significant at the $p < .001$ level. Communalities of the factor loadings did reveal broader range in terms of how well the latent variables explained their corresponding indicators; the range of communalities for indicators of *cultural socialization* was .25 to .50, and the range of communalities for indicators of *preparation for bias* was .18 to .65. These ranges were not surprising given the introductory nature of measuring the scale. Lastly, the factor covariance estimate indicated a very strong positive relation between the two latent variables ($\psi_{21} = .72, p < .001$).

Measurement Invariance

The second goal of this study was to assess the equivalence of measuring the early ethnic-racial socialization behaviors in regard to ethnic minority status, that is, between ethnic minority ($n = 297$) and European-American ($n = 171$) mothers. The main questions addressed by tests of measurement invariance included: Are *cultural socialization* and *preparation for bias* the same constructs between these two groups? And, do any aspects of *cultural socialization* or

preparation for bias differ as a function of maternal minority status? Tests of measurement invariance typically include three increasingly stringent model specifications. First, establishing the same form or pattern of indicators exists between groups supports imposing configural invariance; this is confirmed when a two-group model fits the data well. Next, establishing the equivalence of factor loadings exists between groups supports imposing weak factorial invariance. Finally, establishing the equivalence of indicator intercepts between groups supports imposing strong factorial invariance.

Establishing weak and/or strong factorial measurement invariance then allows for further probing the characteristics of groups in regard to their latent dimensions, referred to as “tests of population heterogeneity” (Brown, 2015, p. 241). Questions asked about the latent parameters in the present study were exploratory in nature, but substantively meaningful given this is the introduction of a scale in a new population. Questions included: Is one group more variable than the other in *cultural socialization* and *preparation for bias*? Does the association between *cultural socialization* and *preparation for bias* differ between these groups? And lastly, do ethnic minority and European-American mothers differ in their mean levels of these underlying constructs?

Test of measurement equivalence and population heterogeneity were guided by the recommendations for multiple-groups CFA by Brown (2015) and Little (2013). Table 9 provides the necessary statistics for modeling tests of equivalence. Throughout the tests of covariance structures, that is, the configural and weak factorial invariance tests, I employed a fixed factor method to scale the

latent variables wherein I fixed the factors variances at 1.0. Once the means vector was incorporated for the tests of strong factorial invariance, I employed an effects coding technique to set the scale in a manner that maintained the raw metric of the indicators to aid meaningful interpretation (Little, Slegers, & Card, 2006).

Moreover, I used the MLsm estimation technique to examine model fit statistics, which are forefronted in tests of measurement invariance because subsequently more restrained models are compared against previous good fitting models. The $\Delta\chi^2$ test is considered too strict for use in such comparisons of unequally sized groups (Little, 2014). Thus, for nested model comparisons of measurement invariance I considered tests of “reasonable comparisons” whereby support for imposing invariance is found when (a) the $\Delta CFI < +/- .01$ (Cheung & Rensvold, 2002) and (b) both models' RMSEA scores fit within the other model's RMSEA 90% CI (Little, 2014). For nested model comparisons for tests of population heterogeneity, I resumed nested model comparisons using the $\Delta\chi^2$ test, in which nonsignificant change in model fit support the tenability of increasingly constrained latent parameters.

Table 10 summarizes the results of the tests of measurement invariance between the two groups. First, results revealed that a 2-group configural invariance model was a good fit to the data: the comparison of factor loadings evidenced the same pattern between groups. Next, results of a 2-group weak factorial invariance model was a good fit to the data: examining the practical fit indices evidenced that constraining the factor loadings to be equal between groups

did not result in a decrease of model fit compared to the configural invariance model. Next, I added to the 2-group model information on indicator and factor means. Then in a test of strong factorial invariance, results revealed the model was an acceptable fit to the data; however, the tests of reasonable comparisons *did not support* imposing strong factorial invariance over the weak factorial invariance model.

Combining the knowledge of the groups' differences on each indicator intercept and observing the fit diagnostics of the strong factorial invariance model, I re-specified the 2-group model in order to test strong *partial* factorial measurement invariance. Partial measurement invariance relaxes—to a limited extent—the idea that all indicators that load onto a factor must be equivalent in measurement, that is, either on loadings and/or indicator intercepts (Brown, 2015; Byrne, Shavelson, & Muthén, 1989). Thus, I specified a model in which all indicator intercepts were constrained to be equal between groups *except for* the intercepts of cs3 and pfb6. Results from the strong partial factorial invariance model revealed that this model was a good fit to the data; examining the practical fit indices evidenced that the partial constraint of indicator intercepts did not result in a decrease in model fit compared to the weak factorial invariance model and thus supported imposing strong partial factorial invariance between the groups.

Having established strong partial factorial invariance, I was able to continue on to fit all models that test population heterogeneity (Brown, 2015). The lower portion of Table 10 summarizes these tests. First, I fit a model to test

whether there was a difference present between the groups among the factor variances and/or covariance (Little, 2014); compared to the weak factorial invariance model, there was a statistically significant worsening of model fit which prompted a subsequent test to find out more precisely where the latent parameters differed. I fit a model to test the equality of factor variances between the groups; again, compared to the weak factorial invariance model, there was a statistically significant change in model chi-square, indicating that ethnic minority and European-American mothers differed in their variances of the latent constructs, whereby ethnic minority mothers were more variable in their report of both *cultural socialization* and *preparation for bias*.

Next, I sought to test the equality of factor covariation—the latent correlation between *cultural socialization* and *preparation for bias*—between groups. In order to necessarily standardize the unequal variances for this test, I used a phantom variable approach (Rindskopf, 1984; Little, 1997). Phantom variables are akin to second-order latent variables that “hover above” the latent variables of interest and are specified such that the variances of the latent variables of interest (here, *cultural socialization* and *preparation for bias*) were fixed at 0.0 and the variances of the phantom cultural socialization and the phantom preparation for bias variables were fixed at 1.0, which allows for the standardized covariance between the phantom variables to be directly interpreted as a latent correlation. First, I fit a model in which the phantom variables were unconstrained. Results revealed the latent correlation between *cultural socialization* and *preparation for bias* (vis-à-vis the phantom cultural

socialization and phantom preparation for bias) was .74 for ethnic minority mothers and .64 for European-American mothers. Next, I fit a model in which this latent correlation was constrained to be equal between groups. Results revealed this equality constraint produced a nonsignificant change in model chi-square, indicating that the two groups did not differ significantly in their latent correlations.

The final test of population heterogeneity examined the equality of latent means and thus used the strong partial factorial invariance model. I examined the effect sizes of the mean differences of the final means model, which essentially involved applying Cohen's d (Cohen, 1988) to the latent parameters of a multi-group model, making sure to incorporate a pooled account of the factor variances (Rosnow & Rosenthal, 1996). When the variances are not similar between groups, as was found to be the case in this sample, the root mean square of the two variances will adjust for this difference. Little (2014) terms this Latent d , and its equation is as follows:

$$\text{Latent } d = \frac{(\alpha_{2j} - \alpha_{1j})}{\sqrt{\psi_{pooled}}}, \text{ where } \sqrt{\psi_{pooled}} = \sqrt{[(n_1\psi_{1jj} + n_2\psi_{2jj})/(n_1 + n_2)]}$$

Results revealed a statistically significant, but small effect size for the latent mean differences; $d_{cs} = .308$ and a $d_{ptb} = .337$. Put another way, given a latent d range of .300-.400, one can assume approximately 62%–66% of ethnic minority mothers will be above the latent mean of European-American mothers on either construct.

Summary of Findings

In this first study, I introduced a measure of ethnic-racial socialization to a diverse sample of young mothers of young children. This was a novel task in that

it represented the first study to assess ethnic-racial socialization in an exclusively young mother sample and one of the few multi-ethnic group studies assessing these socialization messages toward young children (Caughy & Owen, 2014). There has been a series of applications of the Hughes and Chen (1997) Race Socialization scale—each of which adds to and extends the story of ethnic-racial socialization in the parent-child dynamic. Here, a robust conceptual literature and an initial replication of a PCA technique indicated that a confirmatory approach to factor building was theoretically sound and statistically plausible. Thus the present study pursued validating the Hughes and Chen 2-factor model prominent in the literature of older parents of adolescents in a young parent sample.

Although endorsement rates were in line with previous studies of older parents, endorsement of the scale items intended to load onto the two factors was low in the MHFE-2EC sample (Hughes, 2003; Caughy et al., 2002; Caughy & Owen, 2014). However, as expected, *cultural socialization* and *preparation for bias* were validated as factors in the full MHFE-2EC sample. The preferred model I tested resembled the final factor structure of the Hughes and Chen (1997) study with one departure at the indicator level to account for a multi-ethnic sample. Additionally, I introduced an error theory to the factor model to account for similar phrasing in items and strongly associated content. Ultimately, a hypothesized correlated residual between two items, “told my child that other people might treat her/him differently or badly because of her/his race/ethnicity”, and “told my child that other people might try to limit her/him because of her/his

race/ethnicity” was shown to support good model fit. Latent correlation between *cultural socialization* and *preparation for bias* was very strong in the sample.

This study also focused on whether measurement was equivalent between European-American non-Hispanic and ethnic minority mothers. Tests of measurement invariance revealed that the Race Socialization scale was equivalently measured between the groups: results upheld a strong partial invariance model in which all factor loadings and 7 of the 9 indicator intercepts may be constrained to be equal. Two indicator intercepts, “taken my child to an event that celebrates or recognizes my child’s cultural heritage” loaded on to *cultural socialization* and “told my child that other people might treat her/him differently or badly because of her/his race/ethnicity” loaded onto *preparation for bias*, were not constrained to be equal in the strong partial invariance model.

Exploratory tests of population heterogeneity examined potential differences at the latent level. Results here revealed that the two groups did significantly differ in the variation of report of ethnic-racial socialization messages. However, the two groups did not differ in their factor covariance (latent correlation) or their latent means (mean levels of report on both *cultural socialization* and *preparation for bias*).

Taken altogether, this measurement-focused study found that despite the low endorsement rates in the MHFE-2EC sample, the Hughes and Chen (1997) Race Socialization scale was able to adequately characterize the constructs of *cultural socialization* and *preparation for bias* in a young mother sample. Going forward, researchers have gained some initial empirical support that the Race

Socialization scale may be used across ethnic/racial groups, including but not limited to European-American non-Hispanic parents, with equivalent measurement.

CHAPTER FIVE

PREDICTING OUTCOMES STUDY: ASSOCIATIONS AMONG SOCIO-ECOLOGICAL FACTORS, EARLY ETHNIC-RACIAL SOCIALIZATION, AND CHILD SCHOOL READINESS

Background

This second study represented an effort to replicate previous cross-sectional examinations of ethnic-racial socialization in a new population within an understudied period of the life course—early childhood. Bornstein (2010) has argued there are necessary goals for examining culturally inclusive accounts of developmental phenomena; that in addition to examining the origins of constructs, functions, and processes, research must document a wide spectrum of human variation. Thus, describing such things as (a) the endorsement (and/or lack thereof) of *early* ethnic-racial socialization behaviors alongside other socio-ecological correlates (Hughes, 2003; Hughes and Johnson, 2001), as well as (b) how behaviors concurrently link to child well-being aimed to form a noteworthy platform from which the field may garner information about the environments of early childhood associated with ethnic-racial socialization.

Examinations of Ethnic-Racial Socialization in Early Childhood

The manifestation and role of ethnic-racial socialization in early childhood is relatively unexplored; however a program of research introduced by Margaret Caughy and colleagues has sought to understand the cultural home environments of African American families, and more recently Mexican-American families, with young and very young children. As reviewed in previous chapters, in a study

of 200 African American families of pre-school aged children, Caughy and colleagues (2002) examined how parents relay ethnic-racial socialization messages through direct communications and the lived environment. Examining four dimensions of Stevenson's Parent's Experience of Racial Socialization (PERS) scale, (i.e., promotion of mistrust, preparation for bias, racial pride, and spirituality), the authors found that greater promotion of racial pride predicted lowered externalizing and internalizing behaviors of the young children, as measured by the Child Behavior Checklist (CBCL) total problems subscale. Likewise, examining the relations between an "Afri-centric" home environment and the cognitive competencies of the sample's preschool aged children, the authors found that greater African American cultural content in the household predicted children's greater factual knowledge and better-developed problem solving skills, as measured by the Kaufman Assessment Battery for Children.

In related work using the PERS scale, Caughy and colleagues have also found a number of gender and neighborhood differences in patterns of and relations involving ethnic-racial socialization of young children. In a sample of 241 African American families of first-graders, Caughy et al. (2006) extended the support for their previous findings; mainly that the households richer in African American cultural content were associated with higher cognitive and language scores of the young children, (measured respectively by the Kaufman Brief Intelligence Test and the Peabody Picture Vocabulary Test-Revised (PPVT-R)). Additionally the authors found the non-optimal, positive association between preparation for bias and behavior problems (as measured by the CBCL) was

magnified in neighborhoods with less pronounced negative social climate. (Of note, this moderated effect was also found when linking promotion of mistrust to behavioral competencies). Drawing from this same sample, Caughy, Nettles, and Lima (2011) used a person-centered approach (i.e., Latent Profile Analysis) to depict caregivers' overall ethnic-racial socialization strategies and found that the latent strategy that emphasized silence about race was more common for families with a boy while emphases on cultural socialization were more common for families with a girl. Moreover, the latter strategy predicted higher cognitive scores for girls, but a third latent strategy which integrated cultural socialization, coping with discrimination, and promotion of mistrust was associated with higher cognitive scores for boys.

Most recently, Caughy and Owens (2014) have looked to extend this line of inquiry on pre-school environments to families of Mexican and Mexican-American origin. In their latest study, the authors examined parents' cultural socialization when children were 2.5 years of age using the 5 items of the Hughes and Chen (1997) Race Socialization cultural socialization subscale; then examined school readiness when children were 3.5 years of age using the Bracken school readiness subscale, the PPVT, and the CBCL. The authors found a low average endorsement of cultural socialization behaviors; including a proportion of 30% of parents who reported no endorsement of these behaviors at all. Employing ordinary least squares regression analysis, the authors found optimal associations between cultural socialization and children's school readiness; specifically that there were positive predictive relations to the Bracken and PPVT and a negative

predictive relation to the CBCL total problems scale, although effect sizes were weak ranging between .11 and .12, marking that these parenting behaviors are likely not the main focus of targeted intervention for children's behavioral health.

Socio-Ecological Correlates of Early Ethnic-Racial Socialization

Although studies have primarily employed samples of older parents, Caughy and colleagues' work, as well as a small number of multiple age group studies that include younger children, have revealed important insights regarding socio-ecological correlates of parents' use of ethnic-racial socialization with young children (Caughy, et al. 2011; Caughy et al, 2002; Caughy & Owen, 2014; Hughes & Chen, 1997; Suizzo. et al, 2008). These studies have revealed that dimensions of ethnic-racial socialization vary in use across family characteristics including, maternal age, child age, education level (Hughes, 2003), levels of poverty (Caughy et al., 2002) and neighborhood ethnic composition (Caughy et al., 2011; Caughy & Owen, 2014). Thus, in this study, I sought to test whether young mothers in the MHFE-2EC sample, like older parents, would vary in their reports of ethnic-racial socialization behaviors across these maternal, child, and neighborhood correlates.

Moreover, this study specifically sought to replicate these findings in regards to how these features concurrently link to the dimensions of *cultural socialization* and *preparation for bias*. Given the prior research, I sought to test that (a) all maternal, child, and neighborhood correlates, as measured in the present study, would positively link to *cultural socialization*, (b) correlates that accentuated life as an ethnic minority would positively link to preparation for

bias, and (c) correlates such as higher maternal age, higher education, child sex (having a boy), and neighborhood affluence would negatively link to preparation for bias. Due to the more limited variance of child age in this sample than previous studies and the inconclusive results for neighborhood ethnic composition, I considered the correlates of child age and percent European-American in the neighborhood as exploratory.

Relations among HFM, Early Ethnic-Racial Socialization, and Children's School Readiness Competencies

Caughy and colleagues' (2002; 2011) formative work on African American preschool age children revealed that a home environment rich in features of the child's ethnic heritage and strategies that endorse cultural pride are positively associated with child intellectual competencies and negatively associated with problem behaviors; whereas the authors found strategies that include preparation for bias and promotion of mistrust are linked with higher problem behaviors. The latter findings bring to bear the question of whether strategies that emphasize discrimination and mistrust are too complex for young children and potentially developmentally inappropriate.

Most recently, Caughy and Owen (2014) revealed small effects sizes of cultural socialization predicting optimal early childhood competencies across African American and Mexican American families. In this study, I sought to extend Caughy and colleagues' line of work to young mothers and hypothesized that behaviors endorsing knowledge and pride in one's cultural heritage (i.e., *cultural socialization*) would be optimally associated with children's school

readiness competencies, whereas behaviors emphasizing racial differences or discrimination (i.e., *preparation for bias*) would be non-optimally associated with children's school readiness competencies.

Scholars have addressed the promise of young mothers to promote their children's school readiness (Luster, Bates, Fitzgerald et al., 2000) and the promise of at-home intervention to optimally influence early childhood outcomes (Maton, 2005; Reynolds & Ou, 2003). Studies have supported home visiting programs' theories of change; that programs can sustain long-term effects that afford children of young and/or economically disadvantaged mothers cognitive and educational benefits (DuMont, Kirkland, Mitchell-Herzfeld et al., 2010; Kitzman et al., 2010).

Within the intervention model of this study, Healthy Families Massachusetts, long-term program effects are posited to influence early childhood well-being *indirectly*: effects of the program are strengthened by enhancing parental knowledge of and abilities to support child development. For example, ethnic-racial socialization is *not directly targeted in program services*, but it is plausible that mothers who receive HFM intervention may be better able to support child's self-esteem and identify developmental appropriateness of messages, suggesting a *plausible* direct link between HFM intervention and early ethnic-racial socialization.

As such in the present study, I included exploratory paths to test whether the impact of Healthy Families intervention would bolster ethnic-racial socialization behaviors that promote knowledge and pride in one's cultural

heritage (i.e., *cultural socialization*) and quell behaviors that may prematurely prepare children for bias. Thus I also explored whether Healthy Families would have an optimal indirect effect on school readiness (Bierman, Nix, Greenberg et al, 2008).

Methods

Data for this study were collected primarily in the MHFE-2EC T4 protocol. The MHFE-2 evaluation is described in greater detail in Chapter 3. MHFE-2 employed a mixed-methods, longitudinal design in order to ascertain whether and how the HFM program was effective in promoting positive change for its clients with particular attention to five primary goal areas. For this study, I assessed a series of cross-sectional structural equation models using T4 quantitative data.

Procedure

Overview of MHFE-2EC procedures is presented in Chapter 3. Pertinent to this study were those measures of maternal report and direct child assessment collected at T4. Maternal report of child emotion regulation, maternal depression, and demographic information were most typically captured at the time of the T4 phone intake interview; whereas child intellectual assessment and maternal report of early ethnic-racial socialization, perceived discrimination, and home literacy activities were captured during the T4 at-home protocol. During the at-home interview, participants were provided the option of completing each measure on a portable tablet or on paper by themselves, with the Tufts researcher, or by a combination of self-response and interviewer-assisted response. Verbal and/or

written maternal consent was obtained prior to interviews (written consent was ultimately obtained for the phone interview). At the beginning of each measure, interviewers reminded participants that their responses were both voluntary and confidential and provided instructions for intentional non-response. Maternal consent for child assessment was established at the beginning of the at-home interview, and child assent was established at the beginning of—as well as throughout—the child assessment protocol.

Participants

The following analyses examined data from all consented mothers ($N = 468$) who participated in the T4 protocol of MHFE-2EC. Table 1 displays demographic and background sample characteristics. Mothers were on average, 23.7 years of age ($SD = 1.34$) at time of interview. Mothers had, on average, 1.6 children at T4. The sample was geographically and ethnically/racially representative of young mothers across Massachusetts. The children in the sample were on average just under 5 years of age ($SD = .47$) and approximately half were female. Most young children were in pre-school settings (42%), or not yet in pre-school settings (38%), while 10% were already in kindergarten.

Measures (*in order of analysis*)

Cultural socialization. Three items intended to measure cultural socialization in the Hughes and Chen (1997) scale were included in the T4 protocol. Prompts included a list of activities pertaining to a child's cultural heritage, for example, "taken my child to an event that celebrates or recognizes my child's cultural heritage group". Mothers first indicated "yes" or "no" if they

had ever engaged in the item behavior; if “yes” respondents then indicated how often in the past year they had engaged in the behavior (*Never, Rarely, Sometimes, Fairly Often, or Very Often*). Items were then coded on a 6-point scale in the same manner as the original scale (0=*No, not ever* to 5= *Very Often*).

Preparation for bias. Six items intended to capture the construct of *preparation for bias* in the Hughes and Chen (1997) scale were included in the T4 protocol. Prompts included a list of messages and communications more specific to the treatment of a child’s ethnic/racial group than to her/his cultural heritage at-large, for example, “explained to my child something s/he saw on TV that showed poor treatment of people from her/his race/ethnicity”. Again, mothers first indicated “yes” or “no” if they had ever engaged in the item behavior; if “yes” respondents then indicated how often in the past year they had engaged in the behavior (*Never, Rarely, Sometimes, Fairly Often, or Very Often*). Items were coded on the 6-point scale described above.

Maternal age. At baseline all participants provided their date of birth: maternal age at T4, expressed in years, was calculated in reference to the date of T4 data collection using the DATEDIFF function in SPSS 21.

Maternal education. At T4 intake, participants were asked to indicate the last grade/level of school they completed, which was collapsed into two mutually exclusive categories for which *has completed high school* was coded as 1 and *has not completed high school* was coded as a 0.

Maternal ethnic minority. Participants indicated their race/ethnicity at study baseline by endorsing any applicable options: *Hispanic/Latina, American*

Indian/Native American/ Alaska Native, East Asian, South Asian, Native Hawaiian or Other Pacific Islander, Black or African American, White, and/or Other. Aligned with the U.S. Census and standards of the National Institutes of Health, responses were coded into four mutually exclusive racial/ethnic groups (see Table 1). The race/ethnicity groups were then collapsed so that mothers who self-identified as African American/Black non-Hispanic, Hispanic, or Multi-/Asian/ Other non-Hispanic were coded as 1 to represent an ethnic minority “status” and mothers who self-identified as European-American non-Hispanic only were recoded as 0.

Maternal perceived discrimination. Perceived discrimination was measured using a modified version of the Williams Major and Everyday Discrimination scale (Williams, Spencer, & Jackson, 1999). This scale has 16 items that measure the chronicity and extent of unfair treatment in the participant’s life and was originally developed to help understand links between acute and everyday racism, socio-economic status, stress, and other health statuses in African Americans; subsequently it has been validated across other ethnic/racial groups (Krieger, Smith, Naishadham, et al., 2005). The 10-item subscale *everyday experiences of discrimination* was used for analyses. For this scale, participants indicated how often in their daily social interactions they experienced the unfair treatment (0=*Never* through 4= *Very Often*) and a mean score was used as a manifest indicator in analyses. In this sample, the 10-item scale had a Cronbach’s α of .85.

Child age. Across T1 and T2, all participants provided their first born child's date of birth: child age at T4, expressed in years, was calculated in reference to the date of T4 data collection using the DATEDIFF function in SPSS 21. Child date of birth was also confirmed at T4.

Child ethnic minority. Participants indicated their child's race/ethnicity across T1 and T2 by endorsing any applicable options: *Hispanic/Latina*, *American Indian/Native American/ Alaska Native*, *East Asian*, *South Asian*, *Native Hawaiian* or *Other Pacific Islander*, *Black* or *African American*, *White*, and/or *Other*. (Child ethnicity/race was confirmed at T4). Aligned with U.S. Census and standards of the National Institutes of Health, responses were coded into four mutually exclusive racial/ethnic groups (see Table 1). The race/ethnicity groups were then dichotomized so that children who were identified as African American/Black non-Hispanic, Hispanic, or Multi-/Asian/ Other non-Hispanic were coded as 1 to represent an ethnic minority "status" and children who were identified as European-American non-Hispanic only were recoded as 0.

Child sex. Following the birth of the target child for MHFE-2 (either at T1 or T2), participants were asked the sex of their first-born child. Responses were coded 1 for *female child* or 0 for *male child*. Child sex was confirmed at T4.

Neighborhood median household income. Median household income at the neighborhood level was measured by the 2010 U.S. Census data for median household income for the Census block group in which the participant lived at T4. In analyses, it was represented as tens of thousands, such that a value of \$45,000 read as \$4.50 in the dataset.

Neighborhood percent European-American. Percent European-American (or ethnic majority) at the neighborhood level was measured by 2010 U.S. Census data representing the percent of non-Hispanic White population reported for the Census block group in which the participant lived at T4. Possible range for this variable was 0.00 to 1.00.

Neighborhood population density. Population density at the neighborhood level was measured by 2010 U.S. Census data representing persons per dry square mile in the Census block group in which the participant lived at T4. In analyses, it was represented as thousands, such that a value of 45,000 people per dry square mile reads as 45 people in the dataset.

Child school readiness. School readiness comprised measures of intellectual and emotional competencies of young children. Emotional competencies reflected maternal report and intellectual competencies reflected direct child assessment scores.

Child emotional competencies. Two constructs of emotional competence were measured by the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). The ERC is a 24-item mother-report questionnaire designed to assess emotionality and regulation in familiar school-age children. The scale prompted mothers with statements that assess the appropriateness of child behaviors. ERC is scored on a 4-point Likert scale ranging from 1=*Rarely/Never* to 4=*Almost Always*. The study used the two central subscales: (a) *emotion regulation* as measured by 8 items (Cronbach's $\alpha = .83$) and (b) *lability/negativity* as measured by 15 items (Cronbach's $\alpha = .96$). *Emotion regulation* captures emotional self-

awareness and appropriate positive expression (e.g., “can recover quickly from upset or distress” or “can say when s/he is feeling sad, angry or mad, fearful or afraid”) through which higher scores indicate greater emotion regulation. *Emotion lability/negativity* captures child rigidity and frustration (e.g., “is impulsive” or “displays negative emotions when attempting to engage others in play”) through which higher scores indicate greater dysregulation.

Child intellectual competencies. Children’s intellectual abilities were assessed by the five “percent mastery” scores comprising the *School Readiness Composite* (SRC) subtest of the Bracken School Readiness Assessment, 3rd Edition (BSRA-3; Bracken, 2007). The Bracken is an intellectual screening instrument for children ages 3 years, 0 months to 6 years, 11 months that tests 85 fundamental concepts covering five areas of relevant and basic content; *color, letters, numbers/counting, sizes/comparisons, and shapes* (percent mastery is raw score/total items per area). The Bracken SRC has been demonstrated to be equally valid across genders and ethnic groups (Bracken, 2007; Shah, Schaefer, & Clark, 2013) as well as predictive of kindergarten performance (Panter & Bracken, 2009).

Home visiting intervention. HFM intervention was measured by the randomized assignment of the participant at MHFE-2 enrollment. The variable for treatment is dichotomous (1=*HFM intervention*). This method assumes an intent-to-treat design in order to obtain the average treatment effect of HFM.

Maternal depression. Maternal depression was measured by the Center for Epidemiological Studies Depression Scale (CES-D; Herge, Landoll, & La

Greca, 2013; Radloff, 1977, 1991). The CES-D is a widely-used 20-item questionnaire meant to capture participants' depressive symptoms and feelings (e.g., "I could not 'get going'"). The CES-D has been demonstrated to have reliability across racial/ethnic groups, among adolescents, and among general and clinically-depressed adults. The CES-D uses a 4-point Likert scale ranging from 0=*Not at all* to 3=*A lot* such that respondents indicate frequency of feelings over the past week. For analyses, the 20 symptoms were summed to create an overall scale score as a manifest indicator in analyses; in this sample, the scale had a Cronbach's α of .91.

Maternal support for education. Maternal support for education was measured by the Home Reading Activities questionnaire, an abridged version of the Home Literacy Environment Questionnaire (HLEQ; Lonigan & Farver, 2002). The HLEQ has shown to have good validity measures in both English and Spanish pre-school populations (Farver, Xu, Eppe, & Lonigan, 2006; Farver, Xu, Lonigan, & Eppe, 2012). The modified version used in MHFE-2EC is a 10-item, mother-report questionnaire designed to gauge *mother's involvement in literacy activities* (5 items) and *children's interest in literacy* (5 items); the former was used in analyses. The measure prompted mothers with statements about the availability, access, and frequency of literacy activities of the home, such as "About how many times per month do you go to the library with your child?" Mother's involvement in literacy activities was scored by a mean score of a 7-point Likert scale, ranging from 0=*Never* to 6=*Daily*, in which higher scores indicated higher parental support for reading activities. This mean score was used

as a manifest indicator in analyses and, in this sample, the scale had a Cronbach's α of .69.

Analytic Approach

For Study 2, I used the following specific strategies in order to adequately represent constructs in the two main analytic models:

Geocoded data. For all three neighborhood-level indicators, I integrated participant spatial data with 2010 U.S. Census socio-economic data. Spatial data, such as addresses and geo-political boundaries, are represented in Geographic Information Systems (GIS) modules by their specific geographic coordinates through a process of geocoding, whereas attribute data, or nonspatial data such as statistics on ethnic/racial composition, are quantified within designated geo-political boundaries. For this study, I geocoded participant addresses at T4, assigned the corresponding geo-political boundary (i.e., the block group), and then integrated the codes with Census data at the block group-level to characterize socio-economic features of participants' neighborhoods.

Parceling strategy. As introduced in Chapter 3, for this study's analyses I employed a parceling strategy for the measurement of all multi-indicator constructs (i.e., *cultural socialization*, *preparation for bias*, *emotion regulation*, *emotion lability/negativity*, and *school readiness*). Parceling strategies are beneficial for use when the relations of interest are among latent variables (Little et al., 2002). (This may be compared to the measurement study in which the relations of interest were among the indicators and thus I did not pursue a parceling strategy). Benefits of parceling include increased reliability of

indicators, introducing more values to the interval scale, improving convergence rates by reducing the size of the variance-covariance input matrix, and ability to create a just-identified measurement model (Hagtvet & Nasser, 2004; Landis, Beal, & Tesluk, 2000; Little et al., 2013).

The final 2-factor model of the measurement study served as the model from which I gleaned information for constructing *cultural socialization* and *preparation for bias* parcels. For the three child outcome variables, I fit a base measurement model free of correlated residuals—a 1-factor, 5-indicator model for the SRC items and a 2-factor, 23-indicator model for the ERC items—then adjusted the measurement model for any significant correlated residuals. When the overall model fit was acceptable, I proceeded to use the parameters of the best fit model to construct the parcels for each of the child outcomes.

The principle goal of the parceling strategy was to construct a just-identified measurement model whereby each multi-indicator construct was measured by three parcels. A just-identified measurement model ensures that model assessment and re-specification can focus exclusively on the latent relations (Little et al., 2002). As such, *cultural socialization* was measured by its three single indicators. *Preparation for bias*, *emotion regulation*, *emotion lability*, and *school readiness composite* were measured variably by averaging sets of 2, 3, 5, and 2 indicators, respectively. I used a two-step parceling approach in which I prioritized grouping indicators with correlated residuals first (e.g., I parceled items pfb7 and pfb8 to reduce the overall proportion of their shared measurement error) and next proceeded with a “factorial algorithm” (Matsunaga, 2008; also

referred to as a “balancing technique” by Little and colleagues) in which I rank-ordered indicator factor loadings and then paired indicators by placing lowest and highest loading items together in a parcel until I exhausted options.

Analyses and Results

The overall aim of this study was to examine the predictive relations among early ethnic-racial socialization, socio-ecological features of the family, and child school readiness competencies. The first goal was to examine the extent of variation of early ethnic-racial socialization practices of young mothers across maternal, child, and neighborhood features. Within a SEM framework, here I fit a model in which *cultural socialization* and *preparation for bias* were regressed upon prominent correlates that previously had been examined in the literature of older parents, while also accounting for the shared covariation among the correlates.

Figure 4 depicts the hypothesized structural model. First, I hypothesized that a covariance structure of the maternal, child, and neighborhood correlates would include significant covariances (a) between *maternal age* and *education* and (b) among *maternal* and *child ethnic minority statuses* and all three neighborhood correlates. I hypothesized that relations between the correlates and *cultural socialization/ preparation for bias* in young mothers would replicate those relations found previously in other parent samples. Mainly, I anticipated that *cultural socialization* would be positively associated with all maternal, child, and neighborhood correlates as measured in the present study; whereas *preparation for bias* would positively associated with correlates that forefront life

as an ethnic minority (i.e., *perceived discrimination, ethnic minority status, high population density*) and negatively associated with *maternal age, maternal education, child sex, and neighborhood affluence*. I considered relations between *preparation for bias* and two correlates (*child age and percent European-American*) as exploratory.

The second goal of this study was to examine indirect pathways among HFM intervention, mothers' early ethnic-racial socialization behaviors, and children's emotional and intellectual school readiness competencies. Here, I fit a SEM model in which *emotion regulation, emotion lability, and school readiness composite* were regressed on *cultural socialization and preparation for bias*; and *cultural socialization and preparation for bias* were regressed on *HFM intervention*. The model was conditioned on variables conceived to be of influence on the child outcomes and ethnic-racial socialization variables: thus analyses included *child age, child sex, maternal age, maternal depression, and home literacy activities* as statistical controls.

Figure 6 depicts the hypothesized structural model for this final analysis. First, I hypothesized that the covariance structure of the full model would include a residual covariance between *emotion regulation* and *emotion lability*. Given the correlational nature of the research design, I could not establish a causal sequence of constructs and thus I did not pursue tests of full mediation among study variables (Mathieu & Taylor, 2006; Little, 2013). Rather, I explored the plausibility that *HFM intervention* would have indirect relations to the child outcomes: more specifically, I explored whether *HFM intervention* would have a

positive direct relation to *cultural socialization* and a negative direct relation to *preparation for bias*. Concomitantly, I hypothesized that *cultural socialization* would have direct positive relations to *emotion regulation* and the *school readiness composite* and a direct negative relation to *emotion lability*; whereas *preparation for bias* would have direct negative associations to *emotion regulation* and *school readiness composite* and a direct positive association to *emotion lability*.

As in the measurement study, I statistically evaluated model fit by multiple indices which I ultimately paired with substantive evaluation of models. Standard assessment included absolute, local, and comparative indices: the standardized root mean square residual (SRMR), the root mean square error and its 90% confidence interval (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI, also referred to as the non-normed fit index). Criteria for “acceptable” and “close” fit were based on the recommendations of Little (2013): SRMR (≤ 0.08 ; ≤ 0.05), RMSEA (≤ 0.08 ; ≤ 0.05), CFI (≥ 0.90 ; ≥ 0.95), and TLI (≥ 0.90 ; ≥ 0.95).

Predictive Maternal, Child, and Neighborhood Correlates of Early Ethnic-Racial Socialization

Figure 4 depicts the theorized model guiding this analysis of correlates. In the figure, solid black arrows represent predictive relations I expected to be positive, black arrows with long dashes represent the relations I expected to be negative in the sample, and dotted grey arrows represent the exploratory tests.

Descriptive results. Most maternal and child characteristics are presented above in the sample description and Table 11 presents the results of central tendency for all variables in the analyses. Results indicated that there were very low accounts of maternal perceived discrimination in the sample ($M = 0.58$, $SD = .60$). Additionally, the mean percent of European-American non-Hispanic residents in participants' neighborhoods was 52% ($SD = 32\%$); the mean median household income was slightly under national average at \$44,100 ($SD = \$23,600$); and neighborhood population density was relatively high ($M = 13,560$, $SD = 10,420$), which was reflective of the areas in which the HFM program sites were coordinated.¹¹

Measurement model. I first fit a measurement model that included all study variables. (Table 12 presents the correlation matrix that informed this analysis). *Cultural socialization* and *preparation for bias* were each measured by three indicators. All correlates were single indicator variables, or manifest variables, and as such, each required an additional limiting assumption to ensure model identification (Little, 2014). Thus, in addition to fixing the variance at 1.0, all single indicator variables were assumed to have no measurement error (i.e., I fixed residual variances at 0.0) with the exception of the only summary score, *perceived discrimination*, for which I used information from its reliability estimate to calculate a specific estimate of its residual variance using the formula $\sigma^2*(1 - \alpha)$ as recommended by Brown (2015) and Little (2013). The indices of the

¹¹ In comparison, Massachusetts as a state had 75% of its 6,547,629 residents self-identify as White alone non-Hispanic in the 2010 U.S. Census; a 2009-2013 adjusted median household income of \$66,866 (which ranked sixth highest in the nation); and an average population density of 839.4 persons per dry square mile (U.S. Census Bureau, 2015).

measurement model revealed acceptable fit $\chi^2_{(df=48, N=468)} = 107.318, p < .001$, SRMR = 0.038, RMSEA = .051 (.038; .064), CFI = .920, TLI = 0.905.

Latent regression. Next, I tested the full theorized model (Figure 4), including all regression paths and all hypothesized covariances among correlates. As displayed in Table 13, the full latent regression model evidenced acceptable fit overall, $\chi^2_{(df=82, N=468)} = 190.282, p < .001$, SRMR = 0.051, RMSEA = .053 (.043; .063), CFI = .931, TLI = 0.899, but indicated less quality of fit in local areas. Estimates of the modification indices suggested an additional covariance be freed between *maternal age* and *child age*. Given the plausibility of this relation in this sample and across other parent samples as well as the substantial EPC value, I re-specified the full theory model by freeing this parameter. The resulting adjusted model indicated improved overall and local fit, $\chi^2_{(df=81, N=468)} = 145.352, p < .001$, SRMR = 0.045, RMSEA = .041 (.030; .052), CFI = .959, TLI = 0.941, and a $\Delta\chi^2$ test indicated this less restricted model should be retained $\Delta\chi^2 = 44.930, \Delta df = 1, p < .001$. Following the determination of a good fitting adjusted model, I then pruned non-significant regression paths one at a time based on lowest *p*-value, as recommended by Little (2013), resulting in 13 iterations of the model.

Final model. The parsimonious final model, displayed in Figure 5, included 7 of the 20 original regression paths. Relations were statistically significant (or at a threshold) and typically small in magnitude with the strongest predictive relation being *preparation for bias* partially regressed on *maternal ethnic minority status*. Specifically, *perceived discrimination* predicted *cultural socialization* ($\beta = .25, p < .01$) and *preparation for bias* ($\beta = .29, p < .001$) in the

expected directions; *maternal ethnic minority status* predicted *cultural socialization* ($\beta = .23, p < .01$) and *preparation for bias* ($\beta = .14, p < .05$) in the expected directions; *maternal education* predicted *preparation for bias* ($\beta = -.12, p < .05$) in the expected direction; and *population density* ($\beta = -.12, p < .10$) indicated trend level predictive association with *preparation for bias* in the expected direction. However, having a girl, *child sex* ($\beta = .10, p < .10$), indicated trend level predictive association with *preparation for bias* in the direction opposite of what was expected. The residual covariance between *cultural socialization* and *preparation for bias* remained strong throughout the nested modeling ($\psi_{CS:PFB} = .78, p < .001$).

Predictive Relations among HFM Intervention, Early Ethnic-Racial Socialization, and Child Outcomes

Figure 6 depicts the theorized model guiding this final Study 2 analysis. In this model, solid black lines represent hypothesized direct, positive relations and black lines with long dashes represent hypothesized direct, negative relations. Of note: the solid grey lines indicate direct paths that were tested as an alternative model.

Descriptive results. Table 14 presents the item and parcel means, standard deviations, and ranges of the analysis model. As has been noted in previous research (Easterbrooks et al., 2013), *maternal depression*—in terms of past week symptomology—was relatively high in the MHFE-2EC T4 sample ($M = 12.80, SD = 10.50$) when one considers a score of 16.00 as the recommended clinical threshold for depression. Additionally, there was a moderate amount of

mother-initiated *home literacy activities* reported by the sample ($M = 3.80$, $SD = 3.91$).

Measurement model. I first fit an unconditioned measurement model that included only study variables of substantive interest. (Table 15 presents the correlation matrix that informed this analysis model). *Emotion regulation*, *emotion lability/negativity*, *school readiness composite*, *cultural socialization*, and *preparation for bias* were each measured by three indicators and I used a fixed factor method to set the scale of those variables. *HFM intervention* was the only single indicator variable and as such, I both fixed the variance at 1.0, and assumed no measurement error wherein I fixed the residual variance at 0.0 for a limiting assumption. Results for the unconditioned measurement model revealed a good fit to the data, $\chi^2_{(df=90, N=468)} = 162.195$, $p < .001$, SRMR = 0.041, RMSEA = .041 (.031; .052), CFI = .957, TLI = 0.943.

Next, I next fit a conditioned measurement model to which I added the six statistical control variables. As with the *HFM intervention* variable, *child age*, *child sex*, and *maternal age* were assumed to have no measurement error, meaning I both fixed the variance terms at 1.0 and the residual terms at 0.0. For the two controls representing summary scores, *maternal depression* and *home literacy activities*, I again used information from reliability estimates to more aptly account for a specific estimate of the residual variance term, again using the formula $\sigma^2*(1 - \alpha)$ as recommended by Brown (2015) and Little (2014). This larger, more complex conditioned measurement model also evidenced a good fit

to the data, $\chi^2_{(df=140, N=468)} = 242.916, p < .001, SRMR = 0.036, RMSEA = .040$ (.031; .048), CFI = .947, TLI = 0.921.

Latent regression. Having established an acceptable measurement model, I next tested a “full” model of latent regression in which I estimated all direct paths depicted in Figure 6 among the substantive latent variables of interest. I regressed all three child outcomes, *cultural socialization*, and *preparation for bias* on control variables in a “full partial” manner so as to “[provide] full control of the covariate influence,” (Little, 2013, p. 195). Little has recommended inclusion of controls on a selective and subsequently pruned basis (p. 197), such that in this analysis each predicted variable was ultimately expected to be regressed on different combinations of the controls after pruning nonsignificant paths. I tested residual covariances among the three child outcomes and between *cultural socialization* and *preparation for bias*; however, I did not estimate any covariances among the statistical controls themselves, or between any statistical control and *HFM intervention*. The full latent regression had overall good fit to the data, but lacked acceptable local parsimony, $\chi^2_{(df=155, N=468)} = 308.574, p < .001, SRMR = 0.045, RMSEA = .046$ (.038; .053), CFI = .921, TLI = 0.893. (The lack of parsimony was anticipated due to the intentional over-fitting of statistical controls). As indicated in Table 16, after pruning nonsignificant effects of control variables, a $\Delta\chi^2$ test indicated this more restricted model should be retained $\Delta\chi^2 = 18.853, \Delta df = 16, p = ns$.

Univariate hypothesis tests in the full latent regression model with pruned controls supported the theorized model in which *HFM intervention* would not

have direct relations to the child outcomes; indeed these direct relations were trivial ($\omega_{ERR:HFM} = -.086$; $\omega_{ERL:HFM} = .151$; $\omega_{SRC:HFM} = -.971$). I next tested the theorized indirect path model, in which I fixed the relations between the child outcomes and *HFM intervention* at 0.0, and the $\Delta\chi^2$ test indicated the more restricted, theorized model was a good fit to the data and should be retained over the full latent regression model $\Delta\chi^2 = 1.119$, $\Delta df = 3$, $p = ns$. However, univariate tests of this retained theorized model did not support the plausibility that *HFM intervention* would positively predict *cultural socialization* ($\omega = .339$) and negatively predict *preparation for bias* ($\omega = 1.017$).

As such, I re-specified the model in which I fixed the relations between *cultural socialization/preparation for bias* and *HFM intervention* at 0.0. This model evidenced a good fit to the data and the $\Delta\chi^2$ test supported the more restricted, adjusted model should be retained over the theorized model $\Delta\chi^2 = 1.383$, $\Delta df = 2$, $p = ns$. Lastly, I adjusted the estimated covariance to align with the theorized model and constrained the residual covariances between *emotion regulation/lability* and the *school readiness composite* at 0.0. This final model evidenced good fit to the data, $\chi^2_{(df=178, N=468)} = 333.672$, $p < .001$, SRMR = 0.050, RMSEA = .043 (.036; .050), CFI = .920, TLI = 0.905 and the $\Delta\chi^2$ test supported constraining the covariance terms, $\Delta\chi^2 = 3.743$, $\Delta df = 2$, $p = ns$.

Final model. Table 17 presents the standardized partial regression coefficients, covariance terms, and standard errors for the full final model. While support for direct relations between *HFM intervention* and *cultural socialization/preparation for bias* was not found, relations among *cultural*

socialization/preparation for bias and child outcomes were either statistically significant or at a trend threshold and in the expected directions. Figure 7 displays the final model for this analysis. Relations were, again, small in magnitude, with the strongest predictive relation being *emotion regulation* partially regressed on *preparation for bias*. Specifically, as expected, *cultural socialization* positively predicted *emotion regulation* (standardized $\beta = .61, p < .10$) and *school readiness composite* (standardized $\beta = .39, p < .10$); and negatively predicted *emotion lability* (standardized $\beta = -.43, p < .10$). Whereas, as expected, *preparation for bias* negatively predicted *emotion regulation* (standardized $\beta = -.71, p < .05$) and *school readiness composite* (standardized $\beta = -.51, p < .05$); and positively predicted *emotion lability* (standardized $\beta = .40, p < .10$). Additionally, *emotion regulation* and *emotion lability* retained a statistically significant negative residual covariance (standardized $\psi_{\text{ERR:ERL}} = -.56, p < .001$) while *cultural socialization* and *preparation for bias* retained a statistically significant positive residual covariance (standardized $\psi_{\text{CS:PFB}} = .80, p < .001$).

Summary of Findings

In this second study, I sought to examine the predictive associations among early ethnic-racial socialization behaviors, socio-ecological features of families, and early childhood competencies. First, I specified a SEM model to test whether maternal, child, and/or neighborhood correlates predicted maternal report of *cultural socialization* and/or *preparation for bias* messages. I hypothesized that all correlates would be associated with *cultural socialization* in a positive manner and that correlates that forefront life as an ethnic minority (i.e., *perceived*

discrimination, ethnic minority status, high population density) would be associated with *preparation for bias* in a positive manner (reflecting higher report), but that most maternal, child, and neighborhood correlates would negatively predict *preparation for bias*. Among statistically significant relations, results revealed support for these hypotheses with the exception that *child sex* (having a girl) predicted higher report of *preparation for bias*. In the final model, higher report of *cultural socialization* was predicted by maternal *perceived discrimination* and *ethnic minority status*. Higher report of *preparation for bias* was predicted by maternal *perceived discrimination*, maternal *ethnic minority status*, neighborhood *population density*, and having a girl; whereas lower report of *preparation for bias* was predicted by having a high school diploma.

The second test of this study examined latent regressions (Figure 6) in which I specified a SEM model to test my hypotheses that *cultural socialization* would directly and optimally predict child emotional and intellectual competencies, whereas *preparation for bias* would directly and non-optimally predict competencies. In this model, I also tested whether *HFM intervention* directly predicted *cultural socialization* in a positive manner and *preparation for bias* in a negative manner. The final model supported hypothesized links between ethnic-racial socialization latent variables and child outcome latent variables: (a) *child emotion regulation* was optimally predicted by *cultural socialization* and non-optimally predicted by *preparation for bias*; (b) *child emotion lability/negativity* was optimally predicted by *cultural socialization* and non-optimally predicted by *preparation for bias*; and lastly, (c) the *school readiness composite*

was also optimally predicted by *cultural socialization* and non-optimally predicted by *preparation for bias*. However, results indicated that *HFM intervention* directly predicted all other latent variables in a trivial manner, such that no direct or indirect links among model latent variables to *HFM intervention* were supported.

CHAPTER SIX

INTEGRATED DISCUSSION

The present study represents initial work toward understanding how young mothers' early socialization messages pertinent to culture, ethnicity, race, and social stratification link to their broader family environments and their young children's school readiness competencies. The study is based on prominent conceptual frameworks that emphasize the potential of adaptive family processes to promote child well-being amidst a racially stratified social experience. As stated in the introduction, the overarching aims of this dissertation were to (a) introduce and assess the application of an ethnic-racial socialization instrument in a sample of young mothers, and (b) examine the predictive associations among socio-ecological features of families, ethnic-racial socialization behaviors, and early childhood competencies.

Using a rigorous analytical framework, findings from the first study validated two prominent dimensions of ethnic-racial socialization—cultural socialization and preparation for bias—as relevant features of young mothers' parenting repertoires. Despite significant variation in response patterns between groups, in which ethnic minority mothers evidenced more variation in responses than European American mothers, findings of the first study also suggest that both ethnic minority and European-American young mothers interpret and engage in these behaviors with their young children in similar ways.

Replicating previous early childhood examinations, the second study examined the extent to which young mothers' ethnic-racial socialization

behaviors were adaptive in promoting children's school readiness. Findings supported previous work, indicating that in early childhood messages intended to instill pride in one's heritage culture were optimally associated with young children's socio-emotional and intellectual competencies, whereas messages that prepare children for bias or highlight racial stratification linked to school readiness in a non-optimal manner. Aligning with these conceptual models that highlight the influence of social hierarchy and stratification on parenting strategies, the second study also suggests that mothers' ecological features that forefront a marginalized experience are associated with higher enactment of both cultural socialization and preparation for bias behaviors.

Contributions to the Field

“An overarching goal of this research has been to unpack the concept of racial socialization and to understand its ecological antecedents and its consequences for children” (Hughes & Chen, 1999, pp. 478-479).

Through this dissertation I aimed to test whether the “ecological antecedents” of ethnic-racial socialization found among older parent and older child samples would be replicated in a young parent, young child sample. Further, based on Caughy and colleagues' initial evidence that these early behaviors link to young children's school readiness; this work also aimed to test whether the “consequences for children” in early childhood found among older parent samples would be replicated in a young parent sample.

The tests of replication represented the core substantive and phenomenological interests of this study; and as this was the first attempt to

capture prominent dimensions of ethnic-racial socialization in young mothers it was necessary to also test whether the instrument used to capture maternal report of ethnic-racial socialization behaviors adequately measured these behaviors as relevant constructs in young mothers. Thus, my intention to test replication necessitated tests of validation.

In addition to examining a young parent, young child sample, this study also examined a racially/ethnically diverse sample which extended and challenged the current conceptual boundaries of the field. The inclusion of European-American mothers and their children in the current study extends prior research which has been based on theoretical and conceptual foci on the adaptive cultures of ethnic minority families. Examining multiple racial/ethnic groups represented the core methodological focus of this study to address the following questions: What are the substantive measurement adjustments required in a multiple group sample? Are groups equivalent in measurement of the theorized constructs? How do groups compare across their latent dimensions?

Given the substantive and methodological pursuits of the study, I shall now highlight key findings of this dissertation that provide notable contributions to the study of ethnic-racial socialization specifically and early childhood socialization more generally. First, through a confirmatory approach, this study validates constructs of ethnic-racial socialization in a diverse, young mother sample which may extend questions regarding how and for whom ethnic-racial socialization might be considered as an adaptive family process. Second, this study replicates previous findings of Caughy and colleagues' work which builds

knowledge of this phenomenon in the early childhood period and thus broadens and extends understanding of the phenomenon across the life course. Third, this study provides insights to the early environments of young families as a context for socialization. Lastly, given the role of a parenting program intervention in the lives of the participants in the sample, this study has initial implications for parenting programs. I will now highlight how each of these contributions is situated within the broader literature and provides direction for future work.

Measurement Validation among Multiple Racial/Ethnic Groups

In this dissertation I used a rigorous analytic framework to validate and replicate promising work in the study of early ethnic-racial socialization. Ultimately, this approach clears a hurdle in measurement in which theory and methodology come into closer alignment: by using a rigorous method that explicitly tests theory this study extends previous work that was exploratory in practice (in a methodological sense) but *not* exploratory in conceptualization. As a result, this study sets a precedent for the field as researchers increasingly gain access to and seek to study multiple racial/ethnic groups: by testing measurement equivalence across groups, this study establishes that young mothers may be compared across ethnic minority and European-American groups when examining early ethnic-racial socialization—which will be important for testing and comparing pathways of current conceptual models (Knight & Hill, 1998).

As alluded to above, the analytic knowledge gained by the tests of measurement equivalence and population heterogeneity in Study 1 elicit unexpected substantive questions: Why are young European-American mothers

equivalent in measurement of these behaviors when theory posits this phenomenon is an adaptive feature of ethnic minority families?

As reviewed in Chapter 4, Hughes and colleagues (Hughes et al., 2009b) addressed this same quandary: the authors found unexpected equivalence in models between African American and White youth, as well as stronger associations between preparation for bias messages and self-esteem and ethnic affirmation for White students than for African American youth. Their explanations are not germane to young mothers of young children, but certainly point to the fact that daily lived experience is much “messier” than the clean boxes of a theoretical model. For example, young mothers have enmeshed social lives and experiences with diverse groups; they are consumers of news, participate in social media, and live in ethnically diverse neighborhoods. Future work will need to unpack within group variation so that we may understand experiences such as parenting as an isolated ethnic minority in a predominantly European American neighborhood or parenting in a neighborhood that has undergone dramatic demographic shifts.

Additionally, families are increasingly multi-ethnic—and in the MHFE-2EC data this is reflected in the data by the relative increases in the proportion of Hispanic/Latino and Multiracial/Asian/Other non-Hispanic children in sample compared to that of mothers in the sample (see Table 1). Going forward, it will be an empirical task to test whether mothers' behaviors more strongly reflect their own racialized experiences or take into consideration the experiences of their children: for example, in this study, equivalence was established on the basis of

maternal ethnicity, however just as relevant would be the study of equivalence based on child ethnicity. Such examinations may also test theory that posits children are active recipients in their socialization (Grusec & Davidov, 2010) and that children's experiences are platforms from which parents' protective (or reactive) ethnic-racial socialization strategies are enacted (Stevenson et al., 2002; Suizzo et al., 2008).

Lastly, teenage mothers of all ethnicities are stigmatized by society. As a result of this stigma, these mothers may be sensitive to issues of inequity and social stratification; and this was suggested in the data by the fact that there were no racial/ ethnic group differences in the perceived discrimination measure. Thus, the context of teenage motherhood may prompt young mothers' ethnic-racial socialization behaviors, whereas the context of older parents who are not stigmatized due to their age, or perhaps marital status, may not prompt ethnic-racial socialization as equally across ethnic minority and European origin groups. Again, addressing such a comparison is an empirical task that requires deep consideration and knowledge of the psychology of young mothers' parenting; given the gap of knowledge in this area there is much work to do to find out how young mothers reference their lived experiences in their parenting.

Replication of Ethnic-Racial Socialization and School Readiness in Early Childhood

At a construct level, Study 2 successfully replicated Caughy and colleagues' work (Caughy, et al. 2011; Caughy et al, 2002; Caughy & Owen, 2014). This replication further supports the need to study ethnic-racial

socialization processes in early childhood. First, despite overall modest endorsement of ethnic-racial socialization behaviors across the MHFE-2EC sample, this study indicates that mothers endorse cultural socialization behaviors more than preparation for bias behaviors and report enacting cultural socialization behaviors with greater frequency than preparation for bias behaviors. These patterns of endorsement support previous work that studied older parents of young children (Caughy et al. 2002; Hughes & Chen, 1997); and are made clear in perspectives such as those of the 18 African American parents of 3-5 year olds interviewed in Suizzo et al. (2008), in which mothers stressed *starting with* cultural activities and emphasizing the family culture as a developmentally appropriate way to overcome racism.

Results show optimal, trend-level associations between cultural socialization and young child socio-emotional and intellectual competencies. The relation between cultural socialization and child intellectual competencies supports the findings of Brown et al.'s (2009) study in the ECLS-K and precisely replicates Caughy and Owen's (2014) findings using the same instruments: the Hughes and Chen (1997) Race Socialization scale and the Bracken school readiness assessment. Thus, this study contributes support to the idea that cultural socialization is a significant feature of optimal early childhood environments and supports the conceptual models that posit cultural socialization as an adaptive feature at the family unit.

Moreover, and perhaps most importantly, in this study mothers' higher endorsement of messages that prepare children for bias or highlight racial

stratification are significantly linked to lower child emotion regulation and lower school readiness test scores. When using the PERS scale, Caughy and colleagues did not find direct links between preparation for bias messages and child intelligence tests in their Baltimore study (Caughy et al. 2002), although later work indicated that preparation for bias directly linked to higher child externalizing behavior in neighborhoods marked by low negative social climate. While not mapped directly onto one another, taken together these findings suggest that in early childhood preparation for bias messages may be a feature of negative or non-optimal functioning in a child's early environment. This idea does not support the conceptual models that have framed the developmental pathways of ethnic minority youth (García Coll et al, 1996); rather, replicating Caughy and colleagues' work here indicates that scholarship must continue to question and re-examine the developmental properties and assumptions of these models if they are to be examined in other periods of the life course.

However, of note, a strong correlation between *cultural socialization* and *preparation for bias* throughout analyses points to the idea that mothers who are endorsing and frequently enacting cultural socialization behaviors also tend to frequently enact preparation for bias behaviors. The very strong residual covariance in Study 2 may simply be an artifact of the parceling procedure, wherein indicators become stronger when combined and thus the parameter estimates of their relations are slightly stronger (Little et al., 2002), however in the indicator-level analyses of Study 1, there were also strong latent correlations between cultural socialization and preparation for bias for both ethnic minority

mothers and European American mothers: so, how is this strong correlation accounted for?

The developmental context of teenage parents may play a role in understanding this composite use of both cultural socialization and preparation for bias for young mothers with young children. If we consider preparation for bias as a non-optimal feature of early childhood environments, it may be that young mothers may not process, reflect, or suppress their communications around discrimination, marginalization, and bias in a manner that older parents are able to do for the benefit of their young children. Young mothers enter motherhood at a period in which their own racial/ethnic and cultural identities are likely to be in flux or actively being examined—so it is unknown whether young mothers have the same opportunities to explore their cultural identities as their peers who delay childbirth. The extent to which young mothers' perceive messages around discrimination, marginalization, and bias as developmentally in/appropriate is also unknown and the idea that this may be a normative feature of young mothers' communications will need further exploration.

When Caughy and colleagues (2011) examined ethnic-racial socialization messages through a latent profile approach, overall strategies that combined cultural socialization and preparation for bias were, one, common and, two, positively associated with boys' cognitive competencies. This suggests it is plausible this high correlation, if analyzed in another manner, may reflect an adaptive strategy for some families. Analytic techniques that consider the composite or profile of parenting behaviors may help explain which mothers

combine these dimensions and to what extent the dimensions are combined. Thus, the strong correlation in this study needs further investigation.

Family Context: Outcomes Indicative of Early Childhood Environment

The conceptual frameworks that guide this study depict mechanistic pathways in the context of a racially stratified society. Generally, these conceptual models propose diverse influences stem from socio-cultural community contexts and resources to the adaptive family context; which ultimately is conceived to directly and indirectly promote child adjustment and functioning. Whereas this study is able to represent and operationalize constructs at all three positions of its conceptual model, it does so in a cross-sectional manner. Yet despite not being able to make causal inferences regarding the mechanisms of ethnic-racial socialization, results from this dissertation provide a valuable first snapshot into the early family environments of young mothers and their children.

Findings of a correlational design are best conceived as associations, or, co-occurrences. Thus, the findings across the two analyses of Study 2 prompt the following question: what is the total family experience or environment being observed? Findings from the first examination of Study 2 provide support for the guiding conceptual frameworks: aspects of maternal ecology that represent experiences of marginalization, that is, perceiving everyday discrimination and being an ethnic minority, are associated with greater report of both dimensions of ethnic-racial socialization. Ethnic minority mothers and children in this sample tend to live in more urban settings, among more ethnic minorities, and in poorer neighborhoods (three features which are also highly inter-correlated) than their

European-American peers. Additionally, living in a more densely populated neighborhood is associated here with higher report of preparation for bias behaviors, but not cultural socialization behaviors. Taken altogether, the inferred lived experience of ethnic minority mothers and ethnic minority children in this sample characterize the compounding interrelations of experience that García Coll and colleagues (1996; 2004) and Rodriguez and the Study Group (2009) describe in their frameworks.

Moreover, in the last analysis, there is glimpse of both the challenging circumstances families of young mothers face and the promising potential for positive parent-child interactions in these families. Young mothers in this sample evidence high depressive symptomology, which notably is linked to their assessments of their children. Whereas maternal depression is associated with child emotional competencies and these competencies were measured by maternal report, it is not related to the child intellectual competencies which were directly assessed with the child. These connections, and lack thereof, suggest that depression may negatively obscure maternal report of child outcomes, that is, depressed mothers view their children more negatively which may have detrimental implications for the daily lived experiences of both children of depressed mothers and depressed mothers themselves.

On the other hand, there were positive, strong associations between mothers' home literacy activities and ethnic-racial socialization as well as mothers' home literacy activities and emotion regulation. These relations

underscored young mothers' efforts to communicate and engage with their young children in a manner that supports education.

Implications for Programs

This dissertation is situated within a follow-up study of an evaluation of the HFM home visiting program. Whereas HFM evidenced no direct influence on the ethnic-racial socialization behaviors of young mothers in Study 2, this finding should be considered alongside the fact that discussion or training around ethnic-racial socialization *is not a program component* of HFM. HFM and other parenting programs face great challenges on a daily basis: programs promote a particular overall service model with vulnerable populations in challenging circumstances yet the home visitors must translate models to individually tailor services in a culturally competent manner (Miller Brotman et al., 2003). As described above, this study elucidates a picture—an initial glimpse, really—of young mothers' perceptions of their parenting behaviors around culture, ethnicity, race, and social stratification. Understanding—even enumerating—the diverse cultural orientations of parents is the fundamental step in developing culturally competent service models (Dumas, Rollock, Prinz, Hops, & Blechman, 1999). The results from this dissertation may act in service of this significant first task by providing basic descriptive evidence of young mothers' ethnic-racial socialization behaviors and the ecological correlates with which these behaviors occur.

More specifically, Study 2 findings indicate that mothers' messages which prepare children for bias or highlight racial stratification are linked to non-optimal child outcomes. This knowledge may act as impetus to introduce parenting

curriculum that explicitly targets parents' experiences of discrimination and bias (which, may naturally stem from themes of stigmatization for teenage parents). Although this study cannot make causal claims between mothers' ethnic-racial socialization messages and children's non-optimal outcomes, attention to parents' marginalizing experiences may shed light upon parenting behaviors and/or features of the home environment that are indicative of non-optimal child functioning. Thus, acknowledging and talking about parents' experiences may act as an entry into their attempts (successful and otherwise) to form an adaptive culture within the family unit.

In fact, intervention and clinical psychologists have long argued that there is a dire need to implement culturally relevant curriculum in parent training (Kotchick and Forehand, 2002). Coard and colleagues (2004) contend the inclusion of ethnic-racial socialization in parent training has the potential to improve parent practices, increase parent engagement with programs, and ultimately improve child behavioral and emotional health. Furthermore, the authors demonstrate through an assessment study that introducing such curriculum is "consistent with basic behavior techniques emphasized in standard interventions with parents of young children" (p. 289), which include encouraging parents to talk about values and model appropriate behavior with their children.

Study Limitations

While the above highlights this dissertation's contributions to the field of ethnic-racial socialization and parenting intervention programs, limitations of the study should be noted. First, this study uses a correlational design. In order to

examine the causal mechanisms depicted in the study's conceptual model (Figure 2) research would ideally require longitudinal and adequately sequential measurement of the phenomenon of interest (Little, 2013). Thus, whereas this study represents the basis of a longitudinal investigation, I am not able to examine or make claims regarding causal inference or mediational mechanisms.

Additionally, the central instrument of this study, the Race Socialization scale, relies on maternal report of past year behaviors which included sensitive social topics such as discrimination (Hughes & Chen, 1997). The potential bias inherent to self-report is well documented (Podsakoff, MacKenzie, Lee, et al., 2003). Concerns for research here include how mothers may have attempted to align their retrospective responses to their cognitions in a manner that is inconsistent with their real, lived experiences (termed the *consistency effect* by Salancik & Pfeffer, 1977). Likewise, mothers may have succumbed to their own dispositions—regarded as *positive and negative affectivity* (Burke, Brief, & George, 1993)—in which one's positive or negative disposition respectively biases ratings in positive and negative manners. Thus, in this study a highly negative maternal disposition may account for associations between maternal report of ethnic-racial socialization and maternal report of child competencies (Podsakoff et al., 2003). Although the study design in the final set of models accounts for this in two ways, (first, I use a direct child assessment of school readiness as a comparative and complementary outcome, and second, in analyses I control for maternal depression); nevertheless the total climate of maternal

disposition and response should be considered in light of the study's supported hypotheses.

Lastly, another limitation is the generalizability of this sample to other parent samples as well as to the population of young mothers. This study's findings likely do not generalize to older parent samples due to the developmental and socio-ecological features of young mothers. Research demonstrates that adolescent mothers experience parenting in qualitatively different ways than older parents; teenage mothers face persistent negative stigmatization (SmithBattle, 2007a) and are more likely to raise their children amidst numerous ecological challenges such as poverty and limited access to resources (SmthiBattle, 2007b). These differences are likely to shape differences in the contexts and mechanisms of children's development. It is also plausible that findings here do not extend to teenage or young mothers outside of Massachusetts. Massachusetts as a geo-political entity may have considerably greater resources available to young mothers in terms of economic, educational, and social support, including programs such as the parenting intervention in which this study is situated. Compared to many other states and regions, Massachusetts has a low teenage birth rate (Centers for Disease Control and Prevention , 2013), a longer history of subsidized and free health care to support families, and a historically liberal social policy environment.

Future Directions for Research

The contributions of this dissertation reveal a number of logical and interesting extensions that should be considered for future research, which I

review here. First, it is evident that longitudinal examinations would bolster knowledge of both the development of ethnic-racial socialization as a process and the phenomena included in hypothesized, mechanistic pathways of leading conceptual models. To-date research on ethnic-racial socialization has relied heavily on correlational design and a focus on examining the phenomenon in the period of adolescence, limiting understanding of the ontogenetic properties of this parent-child dynamic. Examining ethnic-racial socialization over time in early childhood may give rise to understanding these properties.

Second, the lived experience within a racially stratified social world forms the basis for empirical investigations that may be most appropriately examined by mixed methods approaches. Parents' messages regarding culture, ethnicity, race, and social stratification are conceptualized as a central feature of their strategic and adaptive cultures: describing patterns of behaviors across parents and understanding prominent ecological links is certainly one empirical task and adequately addressed using quantitative analyses. However, understanding how parents "make meaning" of their and their children's racialized social positions and how parents subjectively define their normative strategies are empirical tasks best examined with interpretive approaches. With such a repertoire of research, an integrated set of knowledge will advance the field and inform practitioners.

Additionally, and as is increasingly prominent in the field, future research should include analysis of quantitative data through person-centered approaches. For example, mothers in this study's sample evidence a strong correlation between behaviors of cultural socialization and preparation for bias suggesting

that discussion of findings cannot truly take the effect of one set of behaviors into account without acknowledging the likelihood that another set of behaviors are concomitantly associated with an outcome. In this case, person-centered techniques would provide empirical bases for describing latent profiles of mothers' *total, integrated* ethnic-racial socialization behaviors and subsequently enable tests of profiles' predictive associations to ecological features and child outcomes.

Lastly, inter- and cross-disciplinary approaches should be initiated in the study of ethnic-racial socialization. Though notable exceptions exist, the field to date has relied nearly exclusively on the perspectives of developmental psychologists interested in adolescence; however, as conceptualized (granted, by this same field), this parent-child dynamic bears upon many aspects of children's health and well-being and empirical evidence is making clear that this link is present from early in the life course (Caughy et al. 2002) well into young adulthood (Barr & Neville, 2008). In service of maximizing the contribution of this field of study to parents, teachers, clinicians, and service providers, researchers should leverage the powerful access, tools, and frameworks of education, public health, medicine, social services, and other essential stakeholders.

Conclusion

This dissertation addresses the need to understand the features and associations of ethnic-racial socialization in the early childhood period.

Capturing aspects of these features and associations is but one part of the discussion; it is also important to provide context for the implications of any knowledge gained by such examination. To be clear: the conception and planning of this study occurred in 2012, and data were completely collected from the young mothers of the sample by June 2014. Thus, this dissertation is essentially a “pre-Ferguson” study. However, I would be remiss to not consider the social climate of the past year in the U.S. since the Ferguson police shooting of Michael Brown in August 2014. That climate includes what appears to be a broader and relatively deeper national conversation about race relations and race in our society, as well as national attention to the daily lived experiences of ethnic minority youth, and particularly our nation’s African American boys.

Ethnic-racial socialization is very much embodied in these conversations and in considering the experience and environments of young people of color as the nation learns about African American mothers’ use of “the talk” with their teenage sons¹² and as children as young as the children in this study declare “Black lives matter” in civil protest. The tasks to, first, understand discrimination, marginalization, and bias as normative and pervasive experiences of families, and next, delineate the diverse experiences and parenting psychologies of families are immense charges. This dissertation provides but an initial glimpse at young mothers’ ethnic-racial parenting behaviors. It is my intent and hope that the knowledge gained from these two studies contributes to the broader mission to understand when, how, and for whom do parents’ messages

¹² For an example, see: <http://www.theethicsproject.org/events/>

regarding culture, ethnicity, race, and social stratification serve as an adaptive feature in children's social development.

References

- Allison, P. D. (2003). Missing data techniques for structural equation modeling. *Journal of Abnormal Psychology, 112*, 545-557.
- Bannon, Jr., W. M., McKay, M. M., Chacko, A., Rodriguez, J. A., & Cavaleria, Jr., M. (2009). Cultural pride reinforcement as a dimension of racial socialization protective of urban African American child anxiety. *Families in Society, 90*, 79-86. DOI:10.1606/1044-3894.3848
- Barr, S. C., & Neville, H. A. (2008). Examination of the link between parental racial socialization messages and racial ideology among black college students. *Journal of Black Psychology, 34*, 131-155. DOI: 10.1177/0095798408314138
- Bierman, K. L., Nix, R. L., Greenberg, M. T., Blair, C., & Domitrovich, C. E. (2008). Executive functions and school readiness intervention: Impact, moderation, and mediation in the Head Start REDI program. *Developmental Psychology, 20*, 821-843.
- Bishop-Josef, S. J., & Zigler, E. (2011). The cognitive/academic emphasis versus the whole child approach: The 50-year debate. In E. Zigler, E., W. S. Gilliam, W. S., & W. S. Barnett, *The Pre-K Debates: Current Controversies and Issues*. Brookes Publishing Company.
- Bornstein, M. (2010). *Handbook of cultural developmental science*. New York, NY: Taylor & Francis Group.
- Boykin, A. W., & Toms, F. D. (1985). Black child socialization: A conceptual framework. In H. P. McAdoo & J. L. McAdoo (Eds.), *Black children: Social, educational, and parental environments* (pp. 33-51). Thousand Oaks, CA: Sage Publications, Inc.
- Bracken, B. A. (2007). *Bracken school readiness assessment (3rd ed)*. San Antonio, TX: Psychological Corporation.
- Briceno, A. C. L., De Feyter, J. J., & Winsler, A. (2013). The school readiness of children born to low-income, adolescent Latinas in Miami. *American Journal of Orthopsychiatry, 83*, 430-442.
- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology, Vol. 1: Theoretical models of human development* (6th ed., pp. 793-828). New York: Wiley.
- Brotman, L. M., Dawson-McClure, S., Calzada, E. J., Huang, K. Y., Kamboukos, D., Palamar, J. J., & Petkova, E. (2013). Cluster (school) RCT of ParentCorps: Impact on kindergarten academic achievement. *Pediatrics, 131*, e1521-e1529. DOI: 10.1542/peds.2012-2632.
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research, second edition*. New York, NY: The Guilford Press.
- Brown, T. L., & Krishnakumar, A. (2007). Development and validation of the adolescent racial and ethnic socialization scale (ARESS) in African American families. *Journal of Youth and Adolescence, 36*, 1072-1085.
- Brown, T. N., & Lesane-Brown, C. L. (2006). Race socialization messages across

- historical time. *Social Psychology Quarterly*, *69*, 201-213. DOI: 10.1177/019027250606900205
- Brown, T. N., Tanner-Smith, E. E., & Lesane-Brown, C. L. (2009). Investigating whether and when family ethnic/race socialization improves academic performance. *Journal of Negro Education*, *78*, 385-404.
- Brown, T. N., Tanner-Smith, E., Lesane-Brown, C. L., & Ezell, M. E. (2007). Child, parent, and situational correlates of familial ethnic/racial socialization. *Journal of Marriage and Family*, *69*, 14-25.
- Bugental, D. B. & Grusec, J. E. (2006). Socialization processes. In W. Damon and R. Lerner (Eds.), *Handbook of child psychology* (Vol. 1, pp. 368-428) (6th ed.). New York: Wiley Publishers.
- Burke, M. J., Brief, A. P., & George, J. M. (1993). The role of negative affectivity in understanding relations between self-reports of stressors and strains: A comment on the applied psychology literature. *Journal of Applied Psychology*, *78*, 402-412.
- Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. New York, NY: Routledge.
- Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin*, *105*, 456-466.
- Caughy, M. O. B., Nettles, S. M., & Lima, J. (2011). Profiles of racial socialization among African American parents: Correlates, context, and outcome. *Journal of Family Studies*, *20*, 491-502. DOI: 10.1007/s10826-010-9416-1
- Caughy, M. O. B., Nettles, S. M., O'Campo, P. J., & Lohrfink, K. F. (2006). Neighborhood matters: Racial socialization of African American children. *Child Development*, *77*, 1220-1236.
- Caughy, M. O., O'Campo, P. J., Randolph, S. M., & Nickerson, K. (2002). The influence of racial socialization practices on the cognitive and behavioral competence of African American preschoolers. *Child Development*, *73*, 1611-1625.
- Caughy, M. O. B., & Owen, M. T. (2014). Cultural socialization and school readiness of African American and Latino preschoolers. *Cultural Diversity and Ethnic Minority Psychology*. Advance online publication. <http://dx.doi.org/10.1037/a0037928>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, *9*, 233-255.
- Circle Systems, Inc. (1986-2013). Stat/Transfer [computer software]
- Centers for Disease Control and Prevention (2013). National Vital Statistics System. Hyattsville, MD: National Center for Health Statistics.
- Clemmens, D. (2003). Adolescent motherhood: a meta-synthesis of qualitative studies. *MCN: The American Journal of Maternal/Child Nursing*, *28*, 93-99.
- Coard, S. I., Wallace, S. A., Stevenson, H. C., & Brotman, L. M. (2004). Towards

- culturally relevant preventive interventions: The consideration of racial socialization in parent training with African American families. *Journal of Child and Family Studies*, *13*, 277– 293.
- Cohen, J. (1998). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Collins, L. M., Schafer, J. L., Kam, C. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological Methods*, *6*, 330-351.
- Constantine, M. G., & Blackmon, S. M. (2002). Black adolescents' racial socialization experiences: Their relations to home, school, and peer self-esteem. *Journal of Black Studies*, *32*, 322-335. DOI: 10.1177/002193470203200303
- Council on Community Pediatrics. (2009). The role of preschool home-visiting programs in improving children's developmental and health outcomes. *Pediatrics*, *123*, 598-603. DOI: 10.1542/peds.2008-3607
- DeGruy, J., Kjellstrand, J. M., Briggs, H. E., & Brennan, E. M. (2012). Racial respect and racial socialization as protective factors for African American male youth. *Journal of Black Psychology*, *38*, 295-420. DOI: 10.1177/0095798411429744
- Doherty, J. and Hughes, M. (2009) *Child Development; Theory into Practice 0–11* (1st ed). Harlow, Essex; Pearson.
- Dumas, J. E., Rollock, D., Prinz, R. J., Hops, H., & Blechman, E. A. (1999). Cultural sensitivity: Problems and solutions in applied preventive interventions. *Applied and Preventive Psychology*, *8*, 175–196.
- DuMont, K., Kirkland, K., Mitchell-Herzfeld, S., Ehrhard-Dietzel, S., Rodriguez, M.L., Lee, E., Layne, C., Greene, R. (2011). A Randomized Trial of Healthy Families New York (HFNY): Does Home Visiting Prevent Child Maltreatment? Final Report to the National Institute of Justice. Available at <http://www.ncjrs.gov/pdffiles1/nij/grants/232945.pdf>.
- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., & Japel, C. (2007). School readiness and later achievement. *Developmental Psychology*, *43*, 1428-1446.
- Easterbrooks, M. A., Bartlett, J. D., Raskin, M., Goldberg, J., Contreras, M. M., Kotake, C., et al. (2013). Limiting home visiting effects: Maternal depression as a moderator of child maltreatment. *Pediatrics*, *132*, S126-S133. DOI: 10.1542/peds.2013-1021K.
- Enders, C.E. (2010), *Applied missing data analysis*. The Guilford Press: New York, NY
- ESRI. (2011). *ArcGIS Desktop: Release 10*. Redlands, CA: Environmental Systems Research Institute.
- Fagan, J., & Lee, Y. (2013). Explaining the association between adolescent parenting and preschoolers' school readiness: a risk perspective. *Journal of Community Psychology*, *41*, 692-708.
- Farver, J. M., Xu, Y., Eppe, S., & Lonigan, C. J. (2006). Home environments and

- young children's school readiness. *Early Childhood Research Quarterly*, 21, 196-212. DOI: 10.1016/j.ecresq.2006.04.008
- Farver, J. A. M., Xu, Y., Lonigan, C. J., & Eppe, S. (2013). The home literacy environment and Latino Head Start children's emergent literacy skills. *Developmental Psychology*, 49, 775-791. DOI: 10.1037/a0028766.
- French, S. E., & Coleman, B. R. (2012). The relation between parental racial socialization and African Americans' racial ideologies. *Journal of Black Psychology*, DOI: 10.1177/0095798412461805
- García Coll, C., Crnic, K., Lamberty, G., Wasik, B. H., Jenkins, R., Garcia, H. V., & McAdoo, H. P. (1996). An integrative model for the study of developmental competencies in minority children. *Child Development*, 67, 1891-1914.
- García Coll, C., & Szalacha, L. A. (2004). The multiple contexts of middle childhood. *The Future of Children*, 14, 81-97.
- Geronimus, A. T., & Korenman, S. (1992). The socioeconomic consequences of teen childbearing reconsidered. *The Quarterly Journal of Economics*, 107, 1187-1214
- Goldberg, J., Jacobs, F., Mistry, J., Easterbrooks, A., Davis, C., & Vashchenko, M. (2009). *Massachusetts Healthy Families Evaluation-2: A randomized controlled trial of a statewide home visiting program for young parents. Annual data report to the Massachusetts Children's Trust Fund*. Medford, MA: Tufts University. Retrieved from Massachusetts Healthy Families Evaluation website: <http://ase.tufts.edu/mhfe/research/documents/FY09Report.pdf>.
- Graham, J. W., Olchowski, A. E., & Gilreath, T. D. (2007). How many imputation are really needed? Some practical clarifications of multiple imputation theory. *Prevention Science*, 8, 206-213. DOI 10.1007/s11121-007-0070-9
- Granberg, E. M., Edmond, M. B., Simons, R. L., Gibbons, F. X., & Lei, M. (2012). The association between racial socialization and depression: Testing direct and buffering associations in a longitudinal cohort of African American young adults. *Society and Mental Health*, 2, 207-225. DOI: 10.1177/2156869312451152
- Gregorich, S. E. (2006). Do self-report instruments allow meaningful comparisons across diverse population groups? Testing measurement invariance using the confirmatory factor analysis framework. *Medical Care*, 44, S78-S94.
- Grusec, J. E. (2011). Socialization processes in the family: Social and emotional development. *Annual Review of Psychology*, 62, 243-269.
- Grusec, J. E., & Davidov, M. (2010). Integrating different perspective on socialization theory and research: A domain-specific approach. *Child Development*, 81, 687-709.
- Hagtvet, K. A., & Nasser, F. M. (2004). How well do item parcels represent conceptually defined latent constructs: A two-facet approach. *Structural Equation Modeling*, 11, 168-193.

- Herge, W. M., Landoll, R. R., & La Greca, A. M. (2013). Center for Epidemiologic Studies Depression Scale (CES-D). In *Encyclopedia of Behavioral Medicine* (pp. 366–367). New York: Springer. Retrieved from http://link.springer.com/content/pdf/10.1007/978-1-4419-1005-9_732.pdf
- Hughes, D. (2003). Correlates of African American and Latino parents' messages to children about ethnicity and race: A comparative study of racial socialization. *American Journal of Community Psychology, 31*, 15-33.
- Hughes, D., Bachman, M. A., Ruble, D. N. & Fuligni, A. (2006a). Tuned in or tuned out: Parents' and children's interpretation of parental racial/ethnic socialization practices. In C. Tamis-Lemonda & L. Balter (Eds.), *Child Psychology: A handbook of contemporary issues*. New York University Press.
- Hughes, D., & Chen, L. (1997). When and what parents tell children about race: An examination of race-related socialization among African American families. *Applied Developmental Science, 1*, 200-214. DOI: 10.1207/s1532480xads0104_4
- Hughes, D., & Chen, L. (1999). The nature of parents' race related communications to children: A developmental perspective. In L. Balter, & C. S. Tamis-LeMonda (Eds.), *Child psychology: A handbook of contemporary issues* (pp. 467–490). Philadelphia, PA: Psychology Press/Taylor & Francis.
- Hughes, D., & Dumont, K. (1993). Using focus groups to facilitate culturally anchored research. *American Journal of Community Psychology, 6*, 775-806.
- Hughes, D., Hagelskamp, C., Way, N., & Foust, M. (2009a). The role of mothers' and adolescents' perceptions of ethnic-racial socialization in shaping ethnic-racial identity among early adolescent boys and girls. *Journal of Youth and Adolescence, 3*, 605 - 626.
- Hughes, D., & Johnson, D. (2001). Correlates in children's experiences of parents' racial socialization behaviors. *Journal of Marriage and Family, 63*, 981-995.
- Hughes, D., Rivas, D., Foust, M., Hagelskamp, C., Gersick, S. and Way, N. (2007) How to Catch a Moonbeam: A Mixed-methods Approach to Understanding Ethnic Socialization Processes in Ethnically Diverse Families, in *Handbook of Race, Racism, and the Developing Child* (eds S. M. Quintana and C. McKown), John Wiley & Sons, Inc., Hoboken, NJ, USA. doi: 10.1002/9781118269930.ch11
- Hughes, D., Smith, E. P., Stevenson, H. C., Rodriguez, J., Johnson, D. J., & Spicer, P. (2006b). Parents' ethnic-racial socialization practices: A review of research and directions for future study. *Developmental Psychology, 42*, 747-770. DOI: 10.1037/0012-1649.42.5.747
- Hughes, D., Witherspoon, D., Rivas-Drake, D., & West-Bey, N. (2009b). Received ethnic-racial socialization messages and youths' academic and behavioral outcomes: Examining the mediating role of ethnic identity and

- self-esteem. *Cultural Diversity and Ethnic Minority Psychology*, 15, 112-124.
- IBM Corporation. (Released 2014). *IBM SPSS Statistics for Windows, Version 22.0*. Armonk, NY: IBM Corp.
- Jacobs, F. (1988/2008). The Five-Tiered Approach to evaluation: Context and implementation. In H. B. Weiss & F. H. Jacobs (Eds.), *Evaluating Family Programs*. New York: Aldine DeGruyter (reissued 2008).
- Jacobs, F. (2003). Child and family program evaluation: Learning to enjoy complexity. *Applied Developmental Science*, 7, 62-75.
- Jacobs, F., & Kapuscik, J. (2000). *Evaluating family preservation services: A guide for state administrators*. Medford, MA: Tufts University.
- Kirkland, K., & Mitchell-Herzfeld, S. (2012). *Evaluating the effectiveness of home visiting services in promoting children's adjustment in school*. New York State Office of Children and Family Services Bureau of Evaluation and Research.
- Kitzman, H.J., Olds, D.L., Cole, R.A., Hanks, C.A., Anson, E.A., Arcoleo, K.J., et al. (2010). Enduring effects of prenatal and infancy home visiting by nurses on children. *Archives of Pediatrics & Adolescent Medicine*, 164, 412-418. DOI: 10.1001/archpediatrics.2010.76.
- Knight, G. P., & Hill, N. E. (1998). Measurement equivalence in research involving minority adolescents. In V. C. McLoyd & L. Steinberg (Eds.), *Studying minority adolescents (pp. 183-210)*. Mahwah, NJ: Erlbaum
- Kotchick, B.A., & Forehand, R.L. (2002). Putting parenting in perspective: A discussion of the contextual factors that shape parenting practices. *Journal of Child and Family Studies*, 11, 255-269.
- Krieger, N., Smith, K., Naishadham, D., Hartman, C., & Barbeau, E. M. (2005). Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health. *Social Science & Medicine*, 61, 1576-1596.
- Lam, V., Guerrero, S., Damree, N., & Enesco, I. (2011). Young children's racial awareness and affect and their perceptions about mothers' racial affect in a multiracial context. *British Journal of Developmental Psychology*, 29, 842-864.
- Landis, R. S., Beal, D. J., & Tesluk, P. E. (2000). A comparison of approaches to forming composite measures in structural equation models. *Organizational Research Methods*, 3, 186-207.
- Lang, K. M., & Little, T. D. (2013). The supermatrix technique: A simple framework for hypothesis testing with missing data. *International Journal of Behavioral Development*, 38, 461-470. DOI: 10.1177/0165025413514326
- Lerner, R. M. (2002). *Concepts and theories of human development (3rd ed.)*. Mahwah, NJ: Lawrence Erlbaum.
- Lerner, R. M. (2004). *Liberty: Thriving and civic engagement among American youth*. Thousand Oaks, CA: Sage
- Lesane-Brown, C. L. (2006). A review of race socialization within black families. *Developmental Review*, 26, 400-426.

- Little, T. D. (1997). Mean and covariance structures (MACS) analyses of cross-cultural data: Practical and theoretical issues. *Multivariate Behavioral Research*, 32, 53–76.
- Little, T. D. (2013). *Longitudinal structural equation modeling*. New York, NY: The Guildford Press.
- Little, T. D. (2014). Structural equation modeling: EPSY 301 [PowerPoint slides].
- Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling*, 9, 151–173.
- Little, T. D., Rhemtulla, M., Gibson, K., & Schoemann, A. M. (2013). Why the items versus parcels controversy needn't be one. *Psychological Methods*, 18, 285-300.
- Little, T. D., Slegers, D. W., & Card, N. A. (2006). A non-arbitrary method of identifying and scaling latent variables in SEM and MACS models. *Structural Equation Modeling*, 13, 59-72.
- Little, R. J., & Rubin, D. B. (2014). *Statistical analysis with missing data*. John Wiley & Sons.
- Lonigan, C. J. & Farver, J. M. (2002). *Home Literacy Environment Questionnaire (HLEQ)*. Unpublished measure.
- Lubke, G. H., & Muthén, B. (2005). Investigating population heterogeneity with factor mixture models. *Psychological methods*, 10, 21-39.
- Luster, T., Bates, L., Fitzgerald, H., Vandenbelt, M., & Key, J. P. (2000). Factors related to successful outcomes among preschool children born to low-income adolescent mothers. *Journal of Marriage and Family*, 62, 133-146. DOI: <http://www.jstor.org/stable/1566693>.
- Manlove, J. (1998). The influence of high school dropout and school disengagement on the risk of school-age pregnancy. *Journal of Research on Adolescence*, 8, 187-220.
- Maralani, V. (2011). From GED to college age trajectories of nontraditional educational paths. *American Educational Research Journal*, 48, 1058-1090.
- Mathieu, J. E., & Taylor, S. R. (2006). Clarifying conditions and decision points for mediational type inferences in organizational behavior. *Journal of Organizational Behavior*, 27, 1031-1056.
- Maton, K.I. (2005). The social transformation of environments and the promotion of resilience in children. In R. DV. Peters, B. Leadbeater, & R.J. McMahon (Eds.), *Resilience in children, families, and communities*. (pp. 119-136). NY: Kluwer.
- Matsunaga, M. (2008). Item parceling in structural equation modeling: A primer. *Communication Methods and Measures*, 2, 260 –293. doi: 10.1080/19312450802458935
- McDonald, R. P., & Ho, M-H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, 7, 64-82. DOI: 10.1037//1082-989X.7.1.64
- Meng, X. L., & Rubin, D. B. (1992). Performing likelihood ratio tests with multiply-imputed data sets. *Biometrika*, 79, 103-111.

- Muthén, L. K., & Muthén, B. O. (1998-2014). *Mplus User's Guide*. Seventh Edition. Los Angeles, CA: Muthén & Muthén
- Miller Brotman, L., Klein, R. G., Kamboukos, D., Brown, E. J., Coard, S., & Sosinsky, L. (2003). Preventive intervention for urban, low-income preschoolers at familial risk for conduct problems: A randomized pilot study. *Journal of Clinical Child and Adolescent Psychology*, *32*, 246–257.
- Mistry, J., Contreras, M. M., & Pufall-Jones, E. (2014). Childhood socialization and academic performance of bicultural youth. In V. Benet-Martinez and Y. Y. Hong (Eds.), *Oxford Handbook of Multicultural Identity*, (pp. 355-378). Oxford, UK: Oxford University Press. DOI: 10.1093/oxfordhb/9780199796694.013.002.
- Mistry, J., & Wu, J. (2010). Navigating cultural worlds and negotiating identities: A conceptual model. *Human Development*, *53*, 5-25. DOI: 10.1159/000268136
- Moua, M. Y., & Lamborn, S. D. (2010). Hmong American adolescents' perceptions of ethnic socialization practices. *Journal of Adolescent Research*, *25*, 416-440. DOI: 10.1177/0743558410361369
- Murry, V. M., Berkel, C., Brody, G. H. Miller, S. J., & Chen, Y. (2009) Linking parental socialization to interpersonal protective processes, academic self-presentation, and expectations among rural African American youth. *Cultural Diversity and Ethnic Minority Psychology*, *15*, 1-10.
- Murry, V. M., Smith, E. P., & Hill, N. E. (2001). Race, ethnicity, and culture in studies of families in context. *Journal of Marriage and Family*, *63*, 911-914. DOI: 10.1111/j.1741-3737.2001.00911.x
- Muthén, L.K. and Muthén, B.O. (1998-2012). *Mplus User's Guide*. Seventh Edition. Los Angeles, CA: Muthén & Muthén
- Neblett, Jr., E. W., Rivas-Drake, D., & Umaña-Taylor, A. J. (2012). The promise of racial and ethnic protective factors in promoting ethnic minority youth development. *Child Development Perspectives*, *0*, 1-9. DOI: 10.1111/j.1750-8606.2012.00239.x
- Olds, D. L., Robinson, J., Pettitt, L., Luckey, D. W., Holmberg, J., Ng, R. K., ... & Henderson, C. R. (2004). Effects of home visits by paraprofessionals and by nurses: age 4 follow-up results of a randomized trial. *Pediatrics*, *114*, 1560-1568. DOI: 10.1542/peds.2004-0961
- Panter, J. E., & Bracken, B. A. (2009). Validity of the Bracken School Readiness Assessment for predicting first grade readiness. *Psychology in the Schools*, *46*, 397-409.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*, 879-903.
- Peck, S. C., Brodish, A. B., Malanchuk, O., Banerjee, M., & Eccles, J. S. (2014). Racial/ethnic socialization and identity development in Black families: The role of parent and youth reports. *Developmental psychology*, *50*, 1897.
- Phillips, D. A., & Shonkoff, J. P. (Eds.). (2000). *From Neurons to Neighborhoods: The Science of Early Childhood Development*. National Academies Press.

- Pianta, R. C., & Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychology Review*.
- Quintana, S. M. (1998). Children's developmental understanding of ethnicity and race. *Applied & Preventive Psychology, 7*, 27-45.
- Quintana, S. M., Aboud, F. E., Chao, R. K., Contreras-Grau, J., Cross, W. E., Hudley, C., ... & Vietze, D. L. (2006). Race, ethnicity, and culture in child development: Contemporary research and future directions. *Child Development, 77*, 1129-1141.
- Quintana, S. M., & Vera, E. M. (1999). Mexican American children's ethnic identity, understanding of ethnic prejudice, and parental ethnic socialization. *Hispanic Journal of Behavioral Sciences, 21*, 387-404. DOI: 10.1177/0739986399214001
- Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401. DOI: 10.1177/014662167700100306.
- Radloff, L. S. (1991). The use of the Center for Epidemiologic Studies Depression Scale in adolescents and young adults. *Journal of Youth and Adolescence, 20*, 149-166. DOI: 10.1007/BF01537606.
- Rhemtulla, M., Brosseau-Liard, P. É., & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods, 17*(3), 354-373.
- Riina, E. M., & McHale, S. M. (2012). Adolescents' experiences of discrimination and parent-adolescent relationship quality: The moderating roles of sociocultural processes. *Journal of Family Issues, 33*, 851-873. DOI: 10.1177/0192513X11423897
- Rimm-Kaufman, S. E., & Pianta, R. C. (2000). An ecological perspective on the transition to kindergarten: A theoretical framework to guide empirical research. *Journal of Applied Developmental Psychology, 21*, 491-511.
- Rindskopf, D. (1984). Using phantom and imaginary latent variables to parameterize constraints in linear structural models. *Psychometrika, 49*, 37-47.
- Rivas-Drake, D., Hughes, D., & Way, N. (2009). A preliminary analysis of associations among ethnic-racial socialization, ethnic discrimination, and ethnic identity among urban sixth graders. *Journal of Research on Adolescence, 19*, 558-584.
- Rodriguez, J., Umaña-Taylor, A. J., Smith, E. P., & Johnson, D. (2009). Cultural processes in parenting and youth outcomes: Examining a model of racial-ethnic socialization and identity in diverse populations. *Cultural Diversity and Ethnic Minority Psychology, 15*, 106-111.
- Rogoff, B. (1990). *Apprenticeship in thinking*. New York, NY: Oxford University Press.
- Rosnow, R. L., & Rosenthal, R. (1996). Computing contrasts, effect sizes, and counternulls on other people's published data: General procedures for research consumers. *Psychological Methods, 1*, 331-340.
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. J. Wiley &

- Sons: New York, NY.
- Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative science quarterly*, 23, 224-253.
- Sameroff, A. (1975). Transactional models in early social relations. *Human Development*, 18, 65-79.
- Schafer, J.L. (1997). *Analysis of incomplete multivariate data*. Chapman & Hall, London.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: our view of the state of the art. *Psychological methods*, 7, 147-177.
- Schumacker, R.E. & Lomax, R.G. (2010). *A Beginner's Guide to Structural Equation Modeling (3rd Ed.)*. New York: Routledge Academic, Taylor & Francis Group.
- Shah, M. B., Schaefer, B. A., & Clark, T. P. (2013). Reliability of Bracken School Readiness Assessment, scores with young children in Mumbai, India. *International Journal of School & Educational Psychology*, 1, 58-66.
- Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion Q-sort scale. *Developmental Psychology*, 33, 906-916.
- SmithBattle, L. (2007a). "I wanna have a good future": Teen mothers' rise in educational aspirations, competing demands, and limited school support. *Youth & Society*, 38, 348-371.
- SmithBattle, L. (2007b). Legacies of advantage and disadvantage: The case of teen mothers. *Public Health Nursing*, 24, 409-420.
- Smith-Donald, R., Raver, C. C., Hayes, T., & Richardson, B. (2007). Preliminary construct and concurrent validity of the Preschool Self-regulation Assessment (PSRA) for field-based research. *Early Childhood Research Quarterly*, 22, 173-187.
- Spencer, M. B. (1995). Old issues and new theorizing about African American youth: A phenomenological variant of ecological systems theory. In R. L. Taylor (Ed.), *Black youth: Perspectives on their status in the United States* (pp. 37-70). Westport, CT: Praeger.
- Spencer, M.B. (2006). Phenomenology and ecological systems theory: Development of diverse groups. In R.M. Lerner & W. Damon (Eds.), *Handbook of child psychology. Vol. 1: Theoretical models of human development* (6th ed., pp. 829-893). New York: Wiley.
- StataCorp LP (1985-2015). Stata statistical software: Release 14. College Station, TX.
- Stevenson, H. C. (1994). Validation of the scale of racial socialization for African American adolescents: Steps toward multidimensionality. *Journal of Black Psychology*, 20, 445-468. DOI: 10.1177/00957984940204005
- Stevenson, H. C., & Arrington, E. G. (2009). Racial/ethnic socialization mediates perceived racism and the racial identity of African American adolescents. *Cultural Diversity and Ethnic Minority Psychology*, 15, 125-136.
- Stevenson, H. C., Cameron, R., Herrero-Taylor, T., & Davis, G. Y. (2002).

- Development of the teenager experience of racial socialization scale: Correlates of race-related socialization frequency from the perspective of black youth. *Journal of Black Psychology*, 28, 84-106.
- Stevenson, H. C., Reed, J., Bodison, P., & Bishop, A. (1997). Racism, stress management, racial socialization beliefs and the experience of depression and anger in African American youth. *Youth & Society*, 29(2), 197-222.
- Suizzo, M., Robinson, C., & Pahlke, E. (2008). African American mothers' socialization beliefs and goals with young children. *Journal of Family Issues*, 29, 287-316. DOI: 10.1177/0192513X07308368
- Telzar, E. H., & Vazquez Garcia, H. A. (2009). Skin color and self-perceptions of immigrant and U.S.-born Latinas: The moderating role of racial socialization and ethnic identity. *Hispanic Journal of Behavioral Sciences*, 31, 357-374. DOI: 10.1177/0739986309336913
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. American Psychological Association: Washington, D. C.
- Umaña-Taylor, A. J., Bhanot, R., & Shin, N. (2006). Ethnic identity formation during adolescence: The critical role of families. *Journal of Family Issues*, 27, 390-414. DOI: 10.1177/0192513X05282960
- Umaña-Taylor, A. J., & Fine, M. A. (2004). Examining ethnic identity among Mexican-origin adolescents living in the United States. *Hispanic Journal of Behavioral Sciences*, 26, 36-59.
- U.S. Census Bureau (2015). <http://quickfacts.census.gov/qfd/states/25000.html>
- Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, 3, 4-69.
- Vygotsky, L. (1962). *Thought and language*. Cambridge, MA: MIT Press. (Original work published 1934).
- Vygotsky, L. (1978). *Mind in society*. Cambridge, MA: MIT Press. (Original work published 1930).
- Williams, D. R., Spencer, M. S., & Jackson, J. S. (1999). Race, stress and physical health: The role of group identity. In R. J. Contrada & R. D. Ashmore (Eds.) *Self and Identity: Fundamental Issues* (pp. 71-100). New York: Oxford University Press.

Table 1

Background and demographic characteristics the of MHFE-2EC Time 4 sample.

	<i>M (SD)</i>	<i>%</i>
<i>Maternal characteristics</i>		
Age at T4 (years)	23.71 (1.34)	
Age at first birth (years)	18.79 (1.28)	
Currently pregnant		9.8
Number of children		
1		46.4
2		43.2
3+		10.5
Race/Ethnicity		
European-American NH		36.5
African American/Black NH		20.9
Hispanic/Latina		35.0
Multiracial/ Asian/ Other NH		7.5
Place of birth		
U.S. born		83.1
U.S. territory born		5.0
Outside of U.S.		11.5
Currently employed		58.4
Currently in school		22.3
Highest level of education		
Less than high school equivalent		16.7
High school diploma/GED		41.7
Post-secondary/ Training		41.5
Relationship status		
Single/ Dating		56.3
Engaged/committed		31.4
Married		12.1
Number of moves in past year	1.60 (1.04)	
<i>Child characteristics</i>		
Age at T4 (years)	4.93 (.47)	
Female		48.1
Race/Ethnicity		
European-American NH		22.0
African American/Black NH		14.5
Hispanic/Latina		44.7
Multiracial/ Asian/ Other NH		18.9
School-setting		
Pre-school		42.2
Kindergarten		10.7
Neither		37.7
Unknown		9.3

Note. NH = non-Hispanic; Percentiles may not add to 100 due to rounding.
SPSS output, based on raw data

Table 2

Characteristics of Mplus output for multiply imputed data by estimation procedure and resulting reporting decision matrix.

	Hypotheses tests		Decision for reporting strategy			
	Univariate	Multivariate	Items		Parcels	
Estimation	Parameter estimates/SEs	Model fit/ χ^2	a) CFA	b) Multigroup CFA	c) Correlates	d) Indirect paths
ML	-parameter est. unbiased -SE possibly biased -no Modification Indices	-D ₃ (not robust) - no basis for S-B χ^2	univariate	univariate	univariate	(SEs considerably overestimated)
ML _{supermatrix}	-parameter est. unbiased -SE biased (<i>not considered</i>) -yes Modification Indices	- χ^2 unbiased -no basis for S-B χ^2	multivariate	multivariate	multivariate	multivariate
Robust ML	-parameter est. = ML -SEs corrected -no Modification Indices	-no fit statistics (simply provides mean and SD across <i>m</i> datasets) -no basis for S-B χ^2	($SE_{ML} = SE_{Robust}$)	($SE_{ML} = SE_{Robust}$)	($SE_{ML} = SE_{Robust}$)	univariate

Notes. ML = Maximum likelihood; SE = standard error(s); S-B χ^2 = Satorra-Bentler χ^2 (scaled factor χ^2 typically used in Robust ML)
Mplus 7.2 available output, *m* = 100 datasets

Table 3

Previously published empirical studies using the Hughes and Chen (1997) Race Socialization scale.

Study	Sample	Child age	Derivation	Results for CS/PFB	Notes	Analyses
Hughes & Chen, 1997	N = 157 AA	4-14y	PAF/ Varimax	CS(3 items, $\alpha = .84$) PFB (7 items, $\alpha = .91$)	Parental report of 14 original items; 2 items removed due to double loading, 2 items removed for low factor loading	$r = .52, p < .01$ subscales used as dependent variables in OLS regression
Hughes & Johnson, 2001	N = 94 AA dyads	3 rd -5 th grade	PCA/ Varimax	CS/Pluralism (4 items, $\alpha = .86$) PFB (4 items, $\alpha = .81$)	Parental report; items with .45 on 1+ factor omitted items <.45 on all factors omitted	$r = .54, p < .05$ subscales used as dependent variables in OLS regression
Hughes, 2003	N = 273 AA, DR, PR	6-17y	PCA/ Varimax	CS (5 items, $\alpha = .87$) PFB (4 items, $\alpha = .74$)	Parental report of 10 original items; 1 removed due to double loading	ANCOVA group comparison; subscales moderated by group in OLS regression
Hughes, Bachman, Ruble, & Fuligni, 2006	N = 151 AA, CA, DR, EA, Russian, Varied	2 nd & 4 th grade	PAF/ Varimax	CS/egalitarianism (5 items, $\alpha_{parent} = .75; \alpha_{child} = .74$) PFB (3 items, $\alpha_{parent} = .77; \alpha_{child} = .78$)	Parental and Child report of 10 original items; 2 items omitted in analyses	$r = .20, p < .05$ subscales used to examine congruence between parent and child reports

(Table 3continued)

Study	Sample	Child age	Derivation	Results for CS/PFB	Notes	Analyses
Hughes, Rivas, Foust, Hagelskamp, Gersick, & Way, 2008	N = 210 AA/B, Latino, CA, EA/W dyads	6 th grade	means of items	CS _P _beliefs (3 items, $\alpha = .76$) CS _P _practices (5 items, $\alpha = .76$) CS _C _perceptions (2 items, $\alpha = .46$) PFB _P _beliefs (4 items, $\alpha = .54$) PFB _P _practices (4 items, $\alpha = .76$) PFB _C _perceptions (5 items, $\alpha = .83$)	Maternal and Child reports	across group comparison; used in confluence with semi-structured interview data
Hughes, Hagelskamp, Way, & Foust, 2009	N = 170 AA/B, Latino, Asian dyads	6 th grade	multi- group CFA	CS _{mother} (4 items, $\alpha = .74$) CS _{child} (3 items, $\alpha = .73$) PFB _{mother} (4 items, $\alpha = .83$) PFB _{child} (5 items, $\alpha = .79$)	8 items in Maternal report (6-pt scale) 8 items Adolescent report (3-pt scale)	$r_{mother} = .50, p < .01$ $r_{child} = .38, p < .01$ factors used in OLS regression (unknown)
Hughes, Witherspoon, Rivas-Drake, & West-Bey, 2009	N = 805 AA, White	4 th -6 th grade	PCA/ Varimax	CS (3 items, $\alpha = .77$) PFB (5 items, $\alpha = .84$)	19 items in Adolescent report (3-point scale)	$r = .42, p < .05$ constructs inputted into a SEM as manifest summary scale
Rivas, Hughes, & Way, 2009	N = 308 AA/B, PR, DR, CA, EA/W	6 th grade	means of items	CS (3 items, $\alpha = .82$) PFB (5 items, $\alpha = .87$)	8 items in Adolescent report (3-point scale)	$r = .40$ Subscales used as predictors in OLS regressions
Caughy & Owen, 2014	N = 399 AA, Latino	2.5y	mean of items	CS (5 items, $\alpha = .72$)	Maternal report	Subscale used as predictor in OLS regression

Note. AA = African American, B = Black, CA = Chinese American, DR = Dominican (Republic), EA = European American, PR = Puerto Rican, W = White
PAF = Principle Axes Factor Analysis, PCA = Principle Components Analysis
CS = cultural socialization, PFB = preparation for bias

Table 4

Standardized loadings for a 2-factor principal components analysis with oblique rotation based on Hughes and Chen (1997) Race Socialization scale (n = 289.)

Item	Component	
	1	2
Done something to celebrate the history of my child's racial/ethnic group? (cs6)	.774	
Taken my child to an event that celebrates or recognizes her/his cultural heritage? (cs3)	.711	
Told or read my child stories about the history of her/his racial/ethnic group? (cs5)	.668	
Said or done things to encourage my child to be proud of her/his cultural heritage? (cs1)	.558	
Told my child stories or read my child story books involving characters who shared my child's race/ethnicity or "looked like" my child? (cs2)	.549	
Purchased clothing for my child that was popular in her/his cultural group, or, taken my child to get a hairstyle popular in her/his cultural group? (cs4)	.531	
Talked to my child about racial/ethnic differences with her/his physical features or others' physical features? (pfb1)	.502	.229
Told my child that other people might treat her/him differently or badly because of her/his race/ethnicity? (pfb7)		.780
Told my child that other people might try to limit her/him because of her/his race/ethnicity? (pfb8)		.758
Talked to my child about the fight for equality among people of her/his race/ethnicity? (pfb4)		.729
Explained to my child something s/he saw on TV that showed poor treatment of people from her/his race/ethnicity? (pfb3)		.550
Talked to my child or corrected something s/he mis-learned in school about her/his race/ethnicity? (pfb9)	.236	.503
Talked about race/ethnicity with someone else when my child could hear me? (pfb2)	.280	.450
Talked with my child about discrimination of people based on things like skin color, accent, or traditional clothing? (pfb6)	.292	.416
Indicated to my child that s/he has to behave better and do better than White kids to get the same respect or rewards? (pfb5)		.401

Note. Factor loadings > .400 are in boldface. cs = cultural socialization item; pfb = preparation for bias item. SPSS output.

Table 5
Item-level endorsement on the Hughes and Chen (1997) Race Socialization scale in the MHFE-2EC sample (N = 468).

Item	label	Endorsement (%)		
		Ever?	High	Valid (%)
Told my child stories or read my child story books involving characters who shared my child's race/ethnicity or "looked like" my child?	cs2	69.5	25.6	74.8
Taken my child to an event that celebrates or recognizes her/his cultural heritage?	cs3	55.2	13.1	74.4
Purchased clothing for my child that was popular in her/his cultural group, or, taken my child to get a hairstyle popular in her/his cultural group?	cs4	38.4	10.3	73.9
Told or read my child stories about the history of her/his racial/ethnic group?	cs5	44.1	9.7	73.7
Done something to celebrate the history of my child's racial/ethnic group?	cs6	43.1	8.3	72.2
Talked to my child about racial/ethnic differences with her/his physical features or others' physical features?	pfb1	70.5	27.3	71.4
Talked about race/ethnicity with someone else when my child could hear me?	pfb2	45.5	11.8	73.9
Explained to my child something s/he saw on TV that showed poor treatment of people from her/his race/ethnicity?	pfb3	50.5	11.1	73.3
Talked to my child about the fight for equality among people of her/his race/ethnicity?	pfb4	34.1	7.9	72.2
Indicated to my child that s/he has to behave better and do better than White kids to get the same respect or rewards?	pfb5	15.0	2.0	73.1
Talked with my child about discrimination of people based on things like skin color, accent, or traditional clothing?	pfb6	46.3	14.1	74.4
Told my child that other people might treat her/him differently or badly because of her/his race/ethnicity?	pfb7	15.9	1.4	74.4
Told my child that other people might try to limit her/him because of her/his race/ethnicity?	pfb8	12.1	0.7	74.1
Talked to my child or corrected something s/he mis-learned in school about her/his race/ethnicity?	pfb9	22.6	2.5	73.3

Note. Ever? endorsement constitutes percent of participants who responded "Yes"; High endorsement constitutes percent of participants who answered "Fairly Often" or "Very Often" (see Chapter 4). SPSS output, supermatrix for $m = 100$ datasets

Table 6

Item-level means, standard deviations, and Pearson's correlations of the Hughes and Chen (1997) Race Socialization scale in the MHFE-2EC sample (N = 468).

	cs2	cs3	cs4	cs5	cs6	pfb1	pfb2	pfb3	pfb4	pfb5	pfb6	pfb7	pfb8	pfb9
cs2	1.000													
cs3	.268	1.000												
cs4	.216	.166	1.000											
cs5	.448	.352	.198	1.000										
cs6	.381	.549	.346	.489	1.000									
pfb1	.392	.248	.136	.327	.242	1.000								
pfb2	.364	.273	.108	.253	.208	.455	1.000							
pfb3	.323	.193	.107	.302	.196	.318	.312	1.000						
pfb4	.278	.300	.105	.381	.329	.363	.428	.575	1.000					
pfb5	.135	.215	.141	.100	.093	.145	.204	.169	.348	1.000				
pfb6	.345	.302	.192	.392	.276	.413	.400	.391	.488	.256	1.000			
pfb7	.155	.217	.112	.203	.209	.154	.200	.247	.439	.513	.289	1.000		
pfb8	.117	.213	.142	.248	.170	.138	.228	.213	.368	.415	.280	.714	1.000	
pfb9	.192	.286	.160	.295	.193	.224	.288	.178	.332	.326	.355	.358	.413	1.000
M	2.27	1.54	1.02	1.18	1.09	2.28	1.24	1.38	0.84	0.23	1.28	0.24	0.16	0.42
SD	1.84	1.73	1.66	1.66	1.62	1.87	1.73	1.70	1.53	0.87	1.74	0.86	0.71	1.08

Note. Raw metric range for all items was 0-5; See Table 4 for corresponding item prompt.

Mplus 7.2 (ML) and SPSS (ML supermatrix) output: the sufficient summary statistics derived from Mplus and SPSS for model input were identical between the ML and ML supermatrix techniques for $m = 100$ datasets. The information is displayed as one here for purposes of transparency and replication. The Mplus summary statistics represent the average correlations, means, and standard deviations across $m = 100$ imputed datasets, in which the statistics are run for each imputed dataset, then averaged. The supermatrix summary statistics are derived from the $m = 100$ imputed datasets in which the datasets are "stacked" one on top of the other. In this format, the dataset resembles 46,800 cases but is analyzed as 468 cases. The supermatrix summary statistics are derived from the 46,800 rows of data.

Table 7

Fit indices and model comparisons for validation tests of the Hughes and Chen (1997) Race Socialization scale in the MHFE-2EC sample (N = 468).

Model	χ^2	df	$\Delta\chi^2$	Δdf	SRMR	RMSEA (90% CI)	CFI	TLI
<u>10-indicator</u>								
Baseline (θ s uncorrelated)	394.152***	34			.081	.150 (.137–.164)	.744	0.661
Full Error Theory	99.700***	30	294.450***	4	.039	.070 (.055–.086)	.950	0.926
Adjusted Error Theory	102.358***	31	2.658 ^{ns}	1	.041	.070 (.055–.085)	.949	0.926
<u>9-indicator</u>								
Baseline (θ s uncorrelated)	320.887***	26			.076	.156 (.141–.171)	.763	0.672
Adjusted Error Theory	88.453***	25	232.430***	1	.040	.074 (.057–.091)	.949	0.927
<u>14-indicator</u>								
Baseline (θ s uncorrelated)	599.890***	76			.078	.121 (.112–.130)	.745	0.695
Full Error Theory	277.391***	71	322.500***	5	.054	.079 (.069–.089)	.900	0.871
Adjusted Error Theory	277.391***	72	0.000 ^{ns}	1	.054	.078 (.068–.088)	.900	0.874
<u>13-indicator</u>								
Baseline (θ s uncorrelated)	512.767***	64			.074	.122 (.113–.132)	.761	0.709
Full Error Theory	247.950***	61	264.820***	3	.053	.081 (.071–.092)	.901	0.873
Adjusted Error Theory	247.951***	62	0.001 ^{ns}	1	.053	.080 (.070–.091)	.901	0.876

Note. $\Delta\chi^2$, nested $\Delta\chi^2$ difference; SRMR, standardized root mean square residual; RMSEA, root mean square error; 90% CI, confidence interval for RMSEA, CFI, comparative fit index; TLI, Tucker-Lewis index

*** $p < .001$, ns nonsignificant

Mplus 7.2 output, ML supermatrix for $m = 100$ datasets in which the input data consisted of a correlations, means, and standard deviations derived from the supermatrix (see note in Table 6).

Table 8

Raw metric factor loadings, indicator intercepts, covariance estimates, and their standard errors (SE) for the final 2-factor model.

	Loading (λ)	Loading SE	Intercept (τ)	Intercept SE
<u>Factor/Indicator</u>				
<i>Cultural socialization (CS)</i>				
cs2	1.120	0.117	2.27	0.100
cs3	0.860	0.107	1.54	0.091
cs5	1.176	0.104	1.18	0.090
<i>Preparation for bias (PFB)</i>				
pfb2	0.942	0.098	1.24	0.093
pfb3	1.102	0.095	1.38	0.090
pfb4	1.235	0.080	0.84	0.080
pfb6	1.123	0.098	1.28	0.094
pfb7	0.401	0.051	0.24	0.045
pfb8	0.301	0.041	0.16	0.038
<u>Covariance</u>				
CS with PFB	0.719	0.057		
pfb7 with pfb8	0.314	0.038		

Note. SE = standard error; See Table 4 for corresponding item prompt.
Mplus 7.2 output, ML for $m = 100$ datasets

Table 9

Item-level Pearson's correlations, endorsement means, and standard deviations of the Hughes and Chen (1997) Race Socialization scale in the MHFE-2EC sample (N = 468).

	<i>cs2</i>	<i>cs3</i>	<i>cs5</i>	<i>pfb2</i>	<i>pfb3</i>	<i>pfb4</i>	<i>pfb6</i>	<i>pfb7</i>	<i>pfb8</i>
<i>cs2</i>	1.000	.291	.467	.378	.383	.304	.384	.184	.138
<i>cs3</i>	.232	1.000	.320	.288	.199	.301	.377	.210	.222
<i>cs5</i>	.417	.345	1.000	.225	.310	.359	.422	.186	.243
<i>pfb2</i>	.338	.150	.270	1.000	.310	.407	.400	.192	.226
<i>pfb3</i>	.206	.138	.265	.296	1.000	.604	.407	.264	.228
<i>pfb4</i>	.230	.142	.383	.435	.504	1.000	.561	.435	.361
<i>pfb6</i>	.275	.172	.336	.408	.360	.341	1.000	.324	.309
<i>pfb7</i>	.079	.101	.196	.167	.175	.374	.213	1.000	.689
<i>pfb8</i>	.062	.099	.227	.193	.152	.335	.212	.812	1.000
<u>European-American non-Hispanic</u>									
<i>M</i>	2.20	0.89	0.87	0.94	1.22	0.43	1.24	0.07	0.06
<i>SD</i>	1.85	1.50	1.52	1.53	1.57	1.17	1.69	0.56	0.50
<u>Ethnic minority</u>									
<i>M</i>	2.31	1.91	1.36	1.411	1.47	1.07	1.30	0.34	0.22
<i>SD</i>	1.84	1.74	1.71	1.81	1.76	1.65	1.78	0.98	0.80

Note. Correlations for European-American non-Hispanic mothers are below the diagonal.

Mplus 7.2 (ML) and SPSS (ML supermatrix) output: the sufficient summary statistics derived from Mplus and SPSS for model input were identical between the ML and ML supermatrix techniques for $m = 100$ datasets. The information is displayed as one here for purposes of transparency and replication. The Mplus summary statistics represent the average correlations, means, and standard deviations across $m = 100$ imputed datasets, in which the statistics are run for each imputed dataset, then averaged. The supermatrix summary statistics are derived from the $m = 100$ imputed datasets in which the datasets are "stacked" one on top of the other. In this format, the dataset resembles 46,800 cases but is analyzed as 468 cases. The supermatrix summary statistics are derived from the 46,800 rows of data.

Table 10

Fit indices and nested model comparisons for tests of measurement equivalence and population heterogeneity between European-American, non-Hispanic and ethnic minority mothers (N = 468).

Model	χ^2	df	$\Delta\chi^2$	Δdf	SRMR	RMSEA (90% CI)	CFI	ΔCFI	TLI
<u>Single-group solutions</u>									
European-American NH (<i>n</i> = 171)	30.192 ^{ns}	25			.040	.035 (.000–.074)	.988		0.982
Ethnic minority (<i>n</i> = 297)	74.343***	25			.044	.082 (.061–.103)	.940		0.913
<u>Measurement Invariance¹</u>									
Equal form (Configural)	104.535***	50			.043	.068 (.050–.087)	.956		0.937
Equal factor loadings (Weak)	112.941***	57			.052	.065 (.047–.082)	.955	.001	0.943
Equal indicator intercepts (Strong)	162.250***	64			.067	.081 (.066–.097)	.921	.035	0.911
Equal indicator intercepts (Strong partial)	125.434**	62			.056	.066 (.049–.083)	.949	.006	0.941
<u>Population Heterogeneity²</u>									
Equal factor variance/covariance	127.316***	60	14.375**	3	.106	.069 (.052–.086)	.946		0.935
Equal factor variance	127.064***	59	14.123***	2	.103	.070 (.053–.087)	.945		0.933
Equal factor covariance	114.017***	58	1.076 ^{ns}	1	.055	.064 (.047–.082)	.955		0.944

¹ uses practical fit indices, i.e., ΔCFI and RMSEA comparison, for difference test against previously retained model

² uses nested $\Delta\chi^2$ difference test against weak factorial model

Note. NH = non-Hispanic; $\Delta\chi^2$, nested $\Delta\chi^2$ difference; SRMR, standardized root mean square residual; RMSEA, root mean square error; 90% CI, confidence interval for RMSEA, CFI, comparative fit index; ΔCFI , nested CFI difference; TLI, Tucker-Lewis index

p* < .01, *p* < .001, ns nonsignificant

Mplus 7.2 output, ML supermatrix of *m* = 100 datasets

Table 11

Means, standard deviations, and ranges for constructs examined in Study 2 analyses predicting ethnic-racial socialization behaviors (N = 468).

Indicator	Mean/ %	SD	Range	Valid (%)
<i>Cultural socialization</i>				
parcel 1 (cs2)	2.27	1.84	0 – 5	
parcel 2 (cs3)	1.54	1.73	0 – 5	
parcel 3 (cs5)	1.18	1.66	0 – 5	
<i>Preparation for bias</i>				
parcel 1	1.26	1.45	0 – 5	
parcel 2	1.11	1.43	0 – 5	
parcel 3	0.20	0.73	0 – 5	
<i>Maternal correlates</i>				
Age	23.71	1.34	20.53 – 26.47	100.0
High school education	83.4%		completed = 1	98.7
Perceived discrimination	0.58	0.60	0 – 4	72.9
Ethnic minority status	63.5%		minority = 1	100.0
<i>Child correlates</i>				
Age	4.93	.47	3.75 – 6.94	100.0
Ethnic minority status	78.2%		minority = 1	94.2
Sex	48.1 %		girl = 1	100.0
<i>Neighborhood correlates</i>				
Percent ethnic majority	0.52	0.32	0 – 1	90.2
Median household income	4.41	2.36	0.83 – 13.44	90.2
Population density	13.56	10.42	0.12 – 66.46	90.2

Note. SPSS output, supermatrix for $m = 100$ datasets.

Table 12

Pearson's correlations for all item- and parcel-indicators in first analysis model of Study 2 (N = 468).

indicator	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. <i>cs_p1</i>	1.000															
2. <i>cs_p2</i>	.279	1.000														
3. <i>cs_p3</i>	.457	.351	1.000													
4. <i>pfb_p1</i>	.425	.346	.392	1.000												
5. <i>pfb_p2</i>	.345	.278	.385	.541	1.000											
6. <i>pfb_p3</i>	.153	.237	.245	.323	.394	1.000										
7. <i>m_age</i>	.001	-.062	-.022	-.040	-.084	.041	1.000									
8. <i>m_pd</i>	.097	-.030	-.029	-.042	-.083	-.175	0.098	1.000								
9. <i>m_ed</i>	.027	.289	.147	.088	.154	.144	-.085	-.014	1.000							
10. <i>m_min</i>	-.043	.126	-.051	.039	.071	.056	-.068	-.033	.287	1.000						
11. <i>c_age</i>	.133	.072	.182	.188	.151	.174	-.047	-.050	.038	-.089	1.000					
12. <i>c_min</i>	.002	.013	.072	-.032	.008	.046	.300	-.001	.007	-.013	.069	1.000				
13. <i>c_sex</i>	.009	.205	.135	.060	.068	.135	-.046	-.083	.649	.187	.041	.022	1.000			
14. <i>bg_maj</i>	.045	.000	.073	.063	.109	.012	.054	.064	-.096	.026	-.028	.015	-.028	1.000		
15. <i>bg_mhi</i>	0.036	-.172	-.073	-.069	-.116	-.129	.085	.087	-.567	-.242	.002	-.036	-.452	.052	1.000	
16. <i>bg_pd</i>	-.006	-.132	-.080	-.010	-.111	-.113	.028	.062	-.312	-.090	-.013	-.027	-.267	-.009	.542	1.000

Note. Mplus 7.2 (ML) and SPSS (ML supermatrix) output: the sufficient summary statistics derived from Mplus and SPSS for model input were identical between the ML and ML supermatrix techniques for $m = 100$ datasets. The information is displayed as one here for purposes of transparency and replication. The Mplus summary statistics represent the average correlations, means, and standard deviations across $m = 100$ imputed datasets, in which the statistics are run for each imputed dataset, then averaged. The supermatrix summary statistics are derived from the $m = 100$ imputed datasets in which the datasets are “stacked” one on top of the other. In this format, the dataset resembles 46,800 cases but is analyzed as 468 cases. The supermatrix summary statistics are derived from the 46,800 rows of data.

Table 13

Fit indices and model comparisons for models examining relations among cultural socialization, preparation for bias, and maternal, child, and neighborhood correlates in the MHFE-2EC sample (N = 468).

Model	χ^2	df	$\Delta\chi^2$	Δdf	SRMR	RMSEA (90% CI)	CFI	TLI
Measurement	107.318***	48			.038	.051 (.038–.064)	.920	0.905
Full latent regression	190.282***	82			.051	.053 (.043–.063)	.931	0.899
Full + Free $\theta_{AGE: AGE_C}$	145.352***	81	44.930***	1	.045	.041 (.030–.052)	.959	0.939
Pruning βs:								
PFB on PCTMAJ	145.372***	82	0.020 ^{ns}	1	.045	.041 (.030–.051)	.960	0.941
PFB on MHHINC	145.481***	83	0.109 ^{ns}	1	.045	.040 (.029–.051)	.960	0.942
PFB on AGE_C	145.568***	84	0.087 ^{ns}	1	.045	.040 (.029–.050)	.961	0.944
CS on EDU	145.794***	85	0.226 ^{ns}	1	.045	.039 (.028–.050)	.961	0.945
CS on MIN_C	146.096***	86	0.302 ^{ns}	1	.045	.039 (.028–.049)	.962	0.946
CS on POPDENS	146.592***	87	0.496 ^{ns}	1	.046	.038 (.027–.049)	.962	0.947
CS on AGE	147.087***	88	0.495 ^{ns}	1	.046	.038 (.027–.048)	.962	0.949
PFB on AGE	147.337***	89	0.250 ^{ns}	1	.046	.037 (.026–.048)	.963	0.950
CS on AGE_C	148.454***	90	1.117 ^{ns}	1	.046	.037 (.026–.048)	.963	0.950
CS on PCTMAJ	149.800***	91	1.346 ^{ns}	1	.046	.037 (.026–.048)	.962	0.950
CS on MHHINC	150.729***	92	0.929 ^{ns}	1	.046	.037 (.026–.047)	.962	0.951
PFB on MIN_C	152.289***	93	1.560 ^{ns}	1	.046	.037 (.026–.047)	.962	0.951
CS on SEX	155.432***	94	3.143 ^{ns}	1	.046	.037 (.027–.048)	.961	0.950

Note. $\Delta\chi^2$, nested $\Delta\chi^2$ difference; SRMR, standardized root mean square residual; RMSEA, root mean square error; 90% CI, confidence interval for RMSEA, CFI, comparative fit index; TLI, Tucker-Lewis index

*** $p < .001$, ** $p < .01$, * $p < .05$, ns nonsignificant

Mplus 7.2 output, ML supermatrix of $m=100$ datasets

Table 14

Means, standard deviations, and ranges for constructs in second analysis of Study 2 (N = 468).

Indicator	Mean/%	SD	Range	Valid(%)
<i>Emotion regulation</i>				
parcel 1	3.61	0.64	1 – 4	
parcel 2	3.56	0.45	1 – 4	
parcel 3	3.64	0.48	1 – 4	
<i>Emotion lability/negativity</i>				
parcel 1	2.08	0.64	1 – 4	
parcel 2	1.73	0.57	1 – 4	
parcel 3	1.51	0.46	1 – 4	
<i>School readiness composite</i>				
parcel 1	0.56	0.34	0 – 1	
parcel 2	0.75	0.20	0 – 1	
parcel 3	0.50	0.24	0 – 1	
<i>Cultural socialization</i>				
parcel 1 (cs2)	2.27	1.84	0 – 5	
parcel 2 (cs3)	1.54	1.73	0 – 5	
parcel 3 (cs5)	1.18	1.66	0 – 5	
<i>Preparation for bias</i>				
parcel 1	1.26	1.45	0 – 5	
parcel 2	1.11	1.43	0 – 5	
parcel 3	0.20	0.73	0 – 5	
<i>Healthy Families intervention</i>	59.4%		intervention=1	100.0
<i>Statistical controls</i>				
child age	4.93	.47	3.75 – 6.94	100.0
child sex	48.1 %		girl = 1	100.0
maternal age	23.71	1.34	20.53 – 26.47	100.0
maternal depression	12.00	10.50	0 – 46	99.6
home literacy activities	3.80	3.91	1 – 6	81.2

Note. Range represents raw metric. SPSS output, supermatrix for $m = 100$ datasets.

Table 15
Pearson's correlations for all item- and parcel-indicators in the second analysis of Study 2 (N = 468).

indicator	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. <i>err_p1</i>	1.00																				
2. <i>err_p2</i>	.24	1.00																			
3. <i>err_p3</i>	.243	.349	1.00																		
4. <i>erl_p1</i>	-.260	-.228	-.258	1.00																	
5. <i>erl_p2</i>	-.257	-.277	-.296	.587	1.00																
6. <i>erl_p3</i>	-.246	-.229	-.277	.522	.636	1.00															
7. <i>brk_p1</i>	-.044	-.009	.104	-.043	-.059	-.035	1.00														
8. <i>brk_p2</i>	.052	.029	.225	-.048	-.087	-.104	.605	1.00													
9. <i>brk_p3</i>	.087	.086	.199	-.120	-.087	-.054	.421	.503	1.00												
10. <i>cs_p1</i>	.025	.127	.076	-.068	-.018	-.067	.040	-.015	.035	1.00											
11. <i>cs_p2</i>	-.053	-.029	-.005	-.068	-.007	-.024	-.084	-.121	-.080	.279	1.00										
12. <i>cs_p3</i>	.003	.033	.031	-.015	-.030	-.080	-.002	.004	.010	.457	.351	1.00									
13. <i>pfb_p1</i>	.030	-.038	-.013	-.034	.027	.045	-.095	-.109	-.036	.425	.346	.392	1.00								
14. <i>pfb_p2</i>	-.040	-.047	-.076	-.048	.027	-.014	-.063	-.150	-.024	.345	.278	.385	.541	1.00							
15. <i>pfb_p3</i>	-.079	-.118	-.138	.015	.108	.121	-.121	-.011	.073	.153	.237	.245	.323	.394	1.00						
16. <i>hfm</i>	-.026	.038	-.044	-.029	-.020	-.016	-.117	-.054	.019	-.006	.026	-.011	.013	.036	.016	1.00					
17. <i>c_age</i>	.018	.003	.005	.053	.043	.074	.375	.259	.342	.002	.013	.072	-.032	.008	.046	-.036	1.00				
18. <i>c_sex</i>	.043	.072	.111	-.095	-.067	-.140	.031	.041	.141	.045	.000	.073	.063	.109	.012	-.006	.015	1.00			
19. <i>m_age</i>	-.026	.080	.036	-.025	-.064	-.049	.193	.241	.190	.001	-.062	-.022	-.040	-.084	.041	-.016	.300	.054	1.00		
20. <i>m_dep</i>	-.091	-.081	-.098	.244	.300	.270	-.012	.005	-.031	.009	-.015	.002	.029	.024	.072	-.127	.048	.078	-.012	1.00	
21. <i>hle_s</i>	.089	.192	.119	-.135	-.091	-.097	-.007	.007	-.011	.233	.172	.193	.179	.172	.132	-.089	-.039	.035	.001	-.071	1.00

Note. Mplus 7.2 (ML) and SPSS (ML supermatrix) output: the sufficient summary statistics derived from Mplus and SPSS for model input were identical between the ML and ML supermatrix techniques for $m = 100$ datasets. The information is displayed as one here for purposes of transparency and replication. The Mplus summary statistics represent the average correlations, means, and standard deviations across $m = 100$ imputed datasets, in which the statistics are run for each imputed dataset, then averaged. The supermatrix summary statistics are derived from the $m = 100$ imputed datasets in which the datasets are “stacked” one on top of the other. In this format, the dataset resembles 46,800 cases but is analyzed as 468 cases. The supermatrix summary statistics are derived from the 46,800 rows of data.

Table 16

Fit indices and model comparisons for models examining relations among HFM intervention, early ethnic-racial socialization, and child school readiness in the MHFE-2EC sample (N = 468).

Model	χ^2	df	$\Delta\chi^2$	Δdf	SRMR	RMSEA (90% CI)	CFI	TLI
Measurement, unconditioned	162.195***	90			.041	.041 (.031–.052)	.957	0.943
Measurement, conditioned	242.916***	140			.036	.040 (.031–.048)	.947	0.921
Full latent regression, full partial controls	308.574***	155			.045	.046 (.038–.053)	.921	0.893
Full latent regression, controls pruned	327.427***	171	18.853 ^{ns}	16	.048	.044 (.037–.051)	.920	0.901
Remove β s: CHILD OUTCOMES on HFM ¹	328.546***	174	1.119 ^{ns}	3	.048	.044 (.036–.051)	.920	0.904
Remove β s: CS and PFB on HFM ²	329.929***	176	1.383 ^{ns}	2	.048	.043 (.036–.050)	.921	0.905
Constrain $\psi_{\text{SRC:ERR}}$ and $\psi_{\text{SRC:ERL}}$ ²	333.672***	178	3.743 ^{ns}	2	.050	.043 (.036–.050)	.920	0.905

¹. Theorized path model

². adjusted theorized path model

Note. $\Delta\chi^2$, nested $\Delta\chi^2$ difference; SRMR, standardized root mean square residual; RMSEA, root mean square error; 90% CI, confidence interval for RMSEA, CFI, comparative fit index; TLI, Tucker-Lewis index; β = regression path; ψ = covariance term (in this instance, residual covariance of endogenous latent constructs)

*** $p < .001$, ** $p < .01$, * $p < .05$, ns nonsignificant

Mplus 7.2 output, ML supermatrix of $m=100$ datasets

Table 17

Standardized partial regression coefficients, covariance terms, and their standard errors for all latent variables in the final model for research question 4.

Regression	β (SE)
<i>DV: Emotion regulation</i>	
Cultural socialization	.609 (0.337)~
Preparation for bias	-.708 (0.318)*
Child sex (girl=1)	.162 (0.055)**
Maternal depression	-.155 (0.061)*
Home literacy activities	.217 (0.093)*
<i>DV: Emotion lability/negativity</i>	
Cultural socialization	-.427 (0.231)~
Preparation for bias	.399 (0.228)~
Child sex (girl=1)	-.149 (0.046)**
Maternal depression	.376 (0.048)***
<i>DV: Bracken school readiness composite</i>	
Cultural socialization	.392 (0.210)~
Preparation for bias	-.509 (0.206)*
Maternal age	.387 (0.048)***
Child age	.163 (0.053)**
<i>DV: Cultural socialization</i>	
Home literacy activities	.407 (0.073)***
<i>DV: Preparation for bias</i>	
Home literacy activities	.285 (0.073)***
Residual covariance	
ψ (SE)	
<i>Emotion regulation : Lability/Negativity</i>	-.559 (0.085)***
<i>Cultural socialization : Preparation for bias</i>	.796 (0.064)***

Note. DV = dependent variable

*** $p < .001$, ** $p < .01$, * $p < .05$, ~ $p < .10$

Mplus 7.2 output, robust ML of $m = 100$ datasets

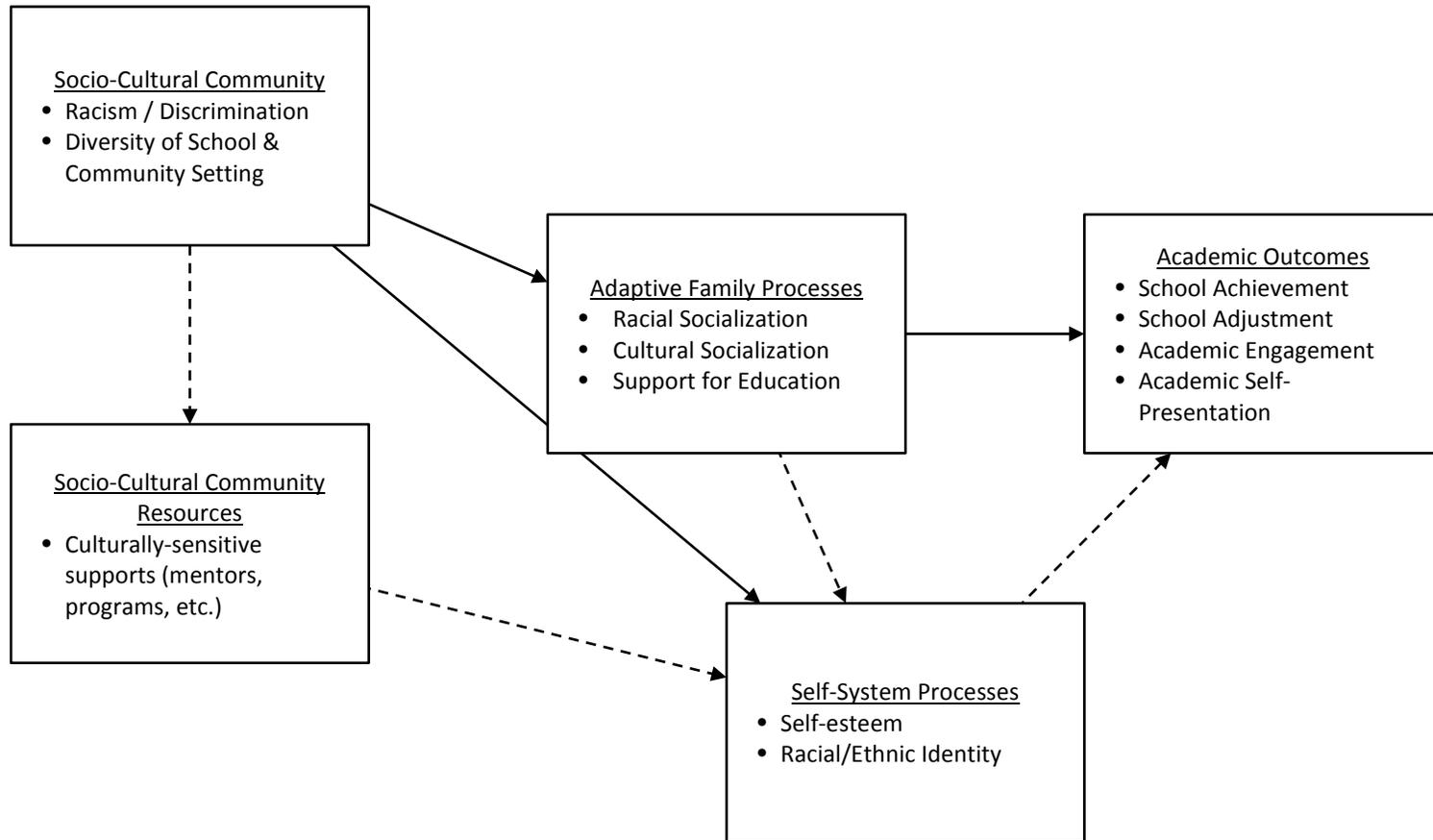


Figure 1. Integrative conceptual framework of extant literature from Mistry, Contreras, & Pufall Jones, 2014.

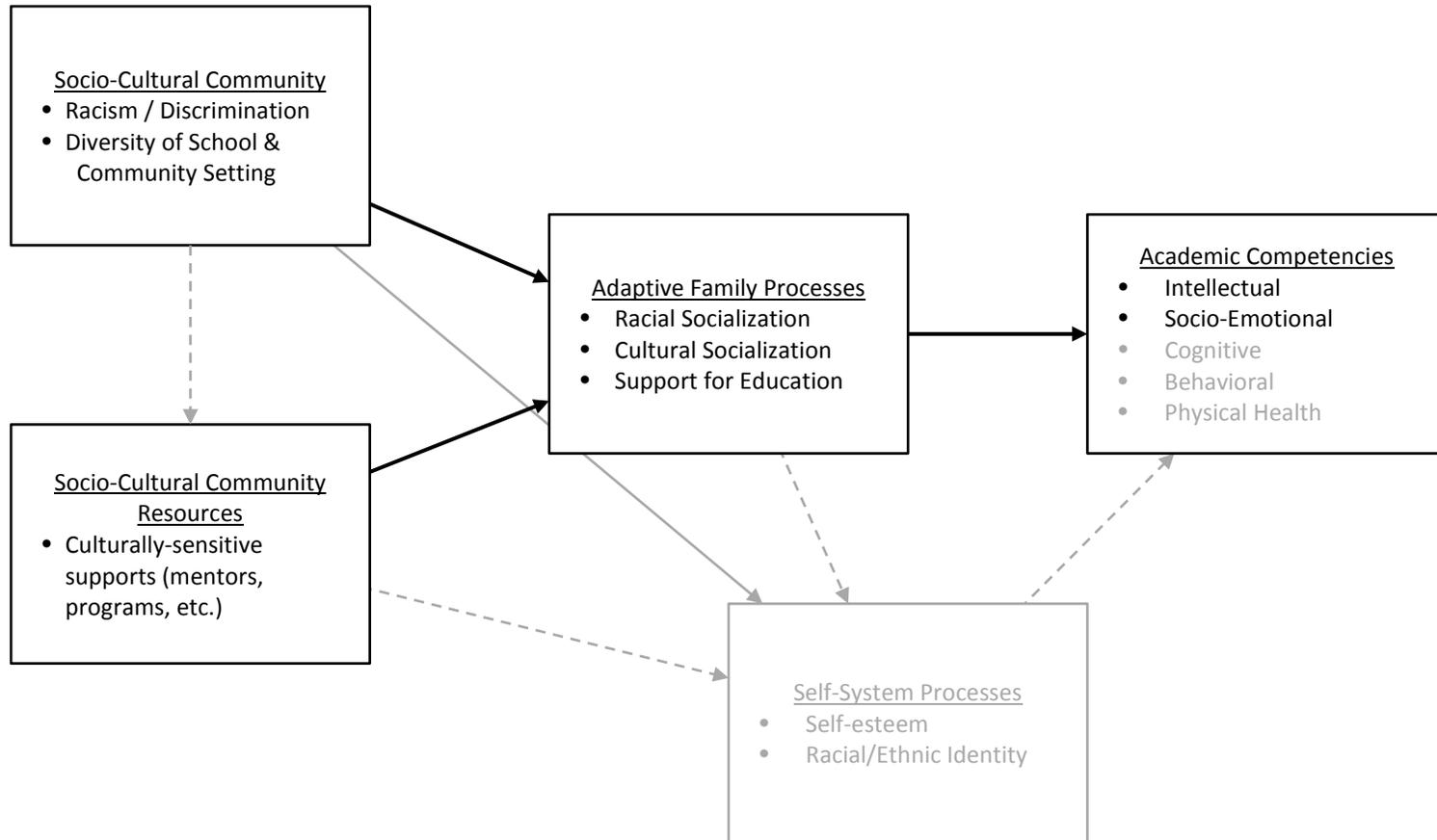
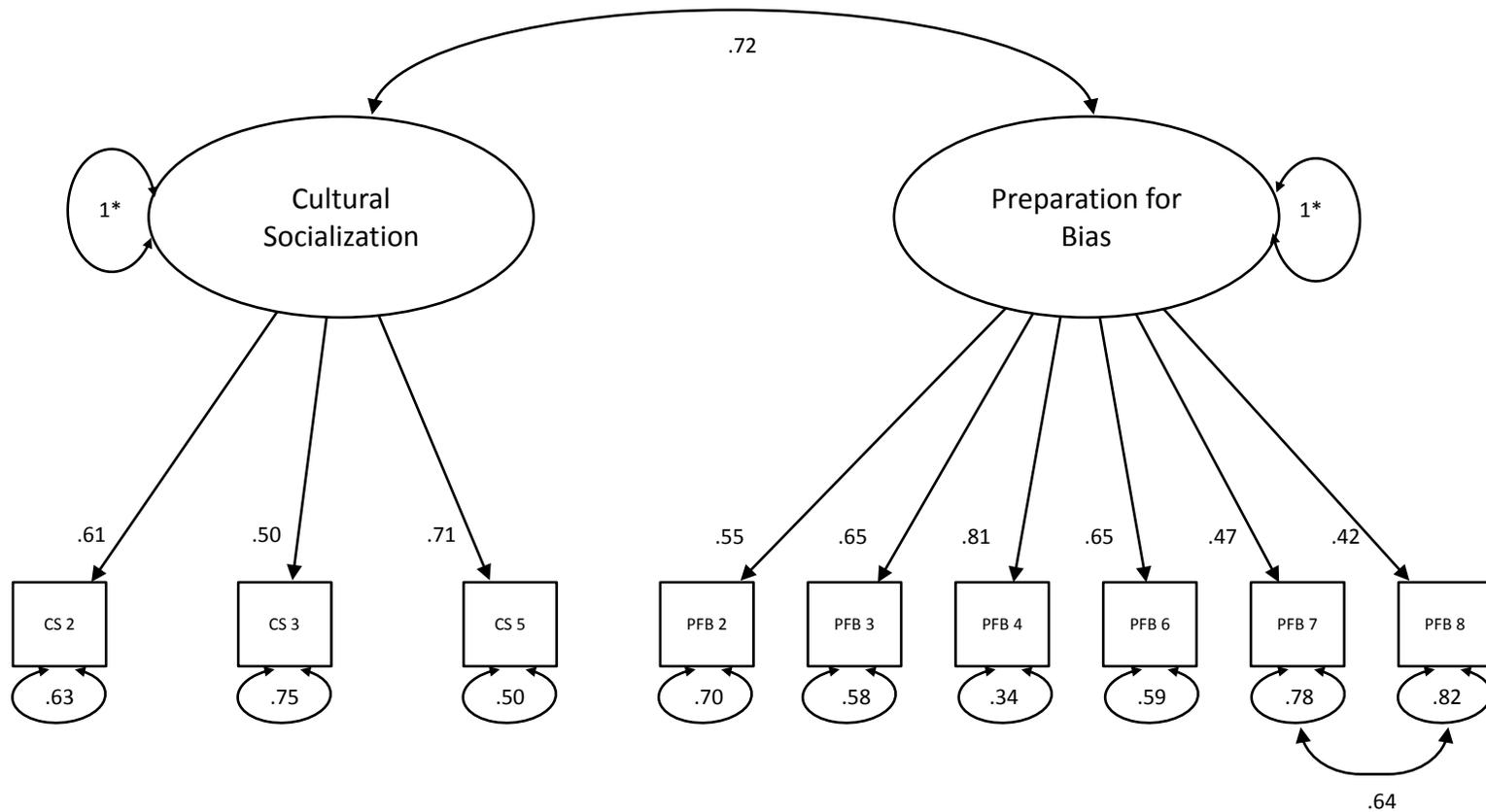


Figure 2. Mistry et al. 2014 conceptual model as examined in the MHFE-2EC Time 4 data.



Model fit: $\chi^2 (df = 25, N = 468) = 88.453, p < .001, SRMR = .040, RMSEA = .074 (.057-.091), CFI = .949, TLI = 0.927$

Figure 3. Final 2-factor CFA model showing the standardized factor loadings, factor covariance, residual errors, and correlated residual of the Hughes and Chen 1997 Race Socialization scale as replicated in the MHFE-2EC T4 sample.

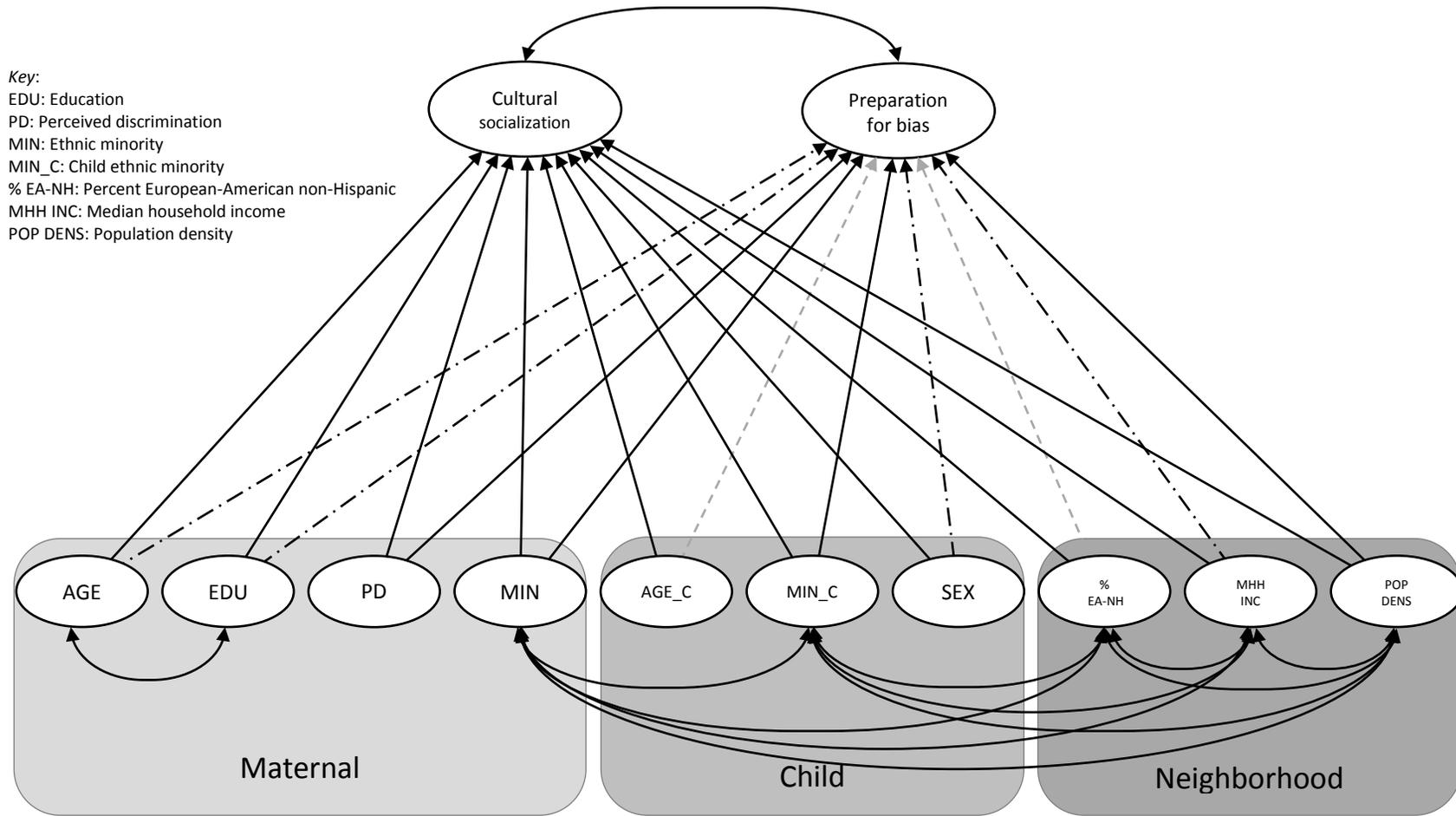
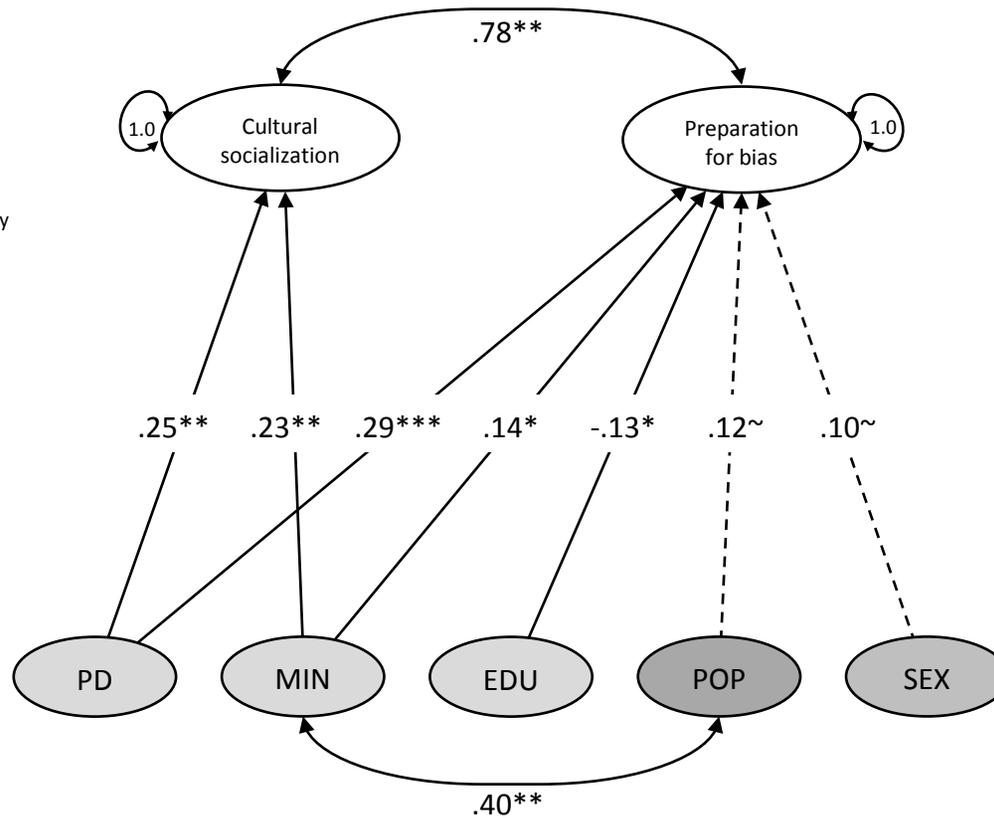


Figure 4. Full hypothesized structural model testing maternal, child, and neighborhood correlates of early ethnic-racial socialization.

Key:
 PD: Perceived discrimination
 MIN: Maternal ethnic minority
 EDU: Maternal education
 POP: Neighborhood population density
 SEX: Child sex



Model fit: $\chi^2(df = 94, N = 468) = 155.432, p < .001, SRMR = 0.046, RMSEA = .037 (.027; .048), CFI = .961, TLI = 0.950$

Figure 5. Final latent regression model depicting the unstandardized beta estimates and covariances of maternal, child, and neighborhood correlates predicting cultural socialization and preparation for bias at Time 4.

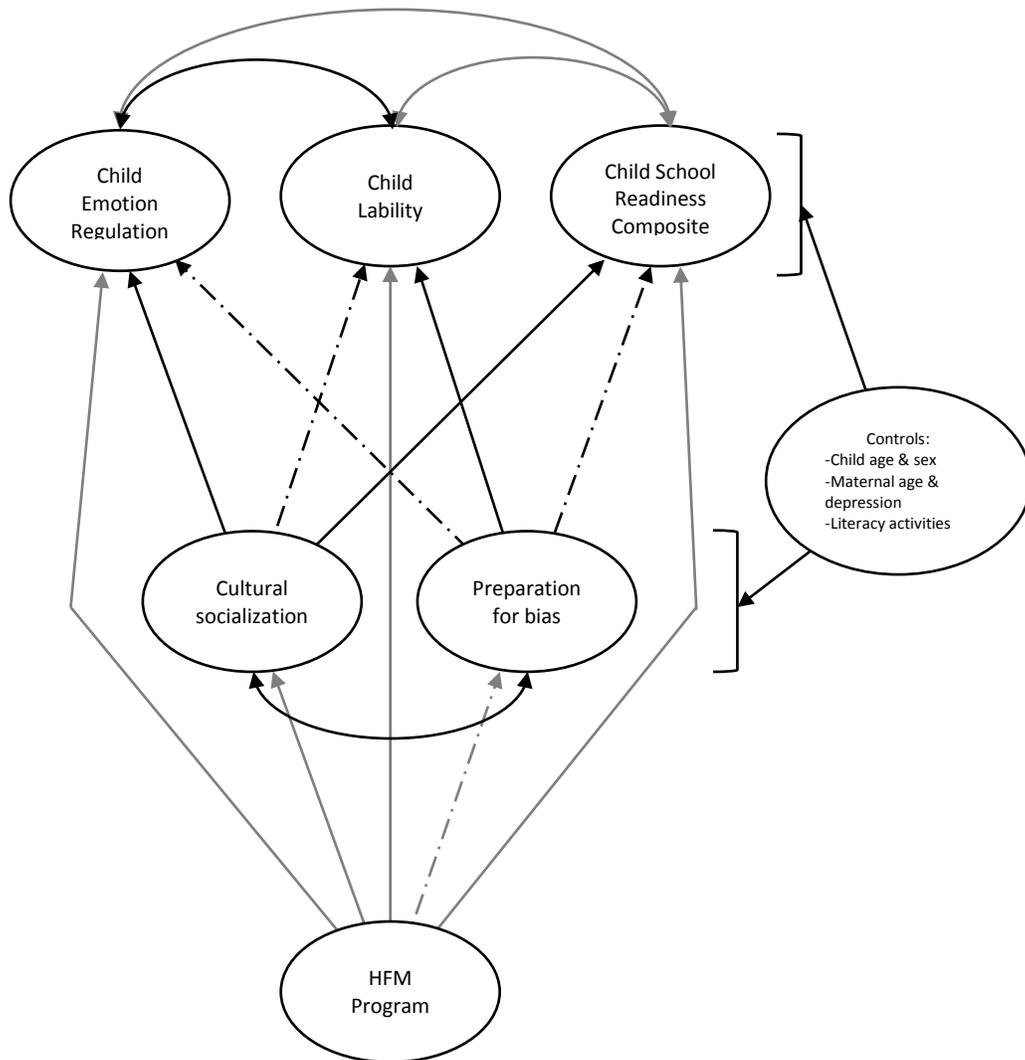
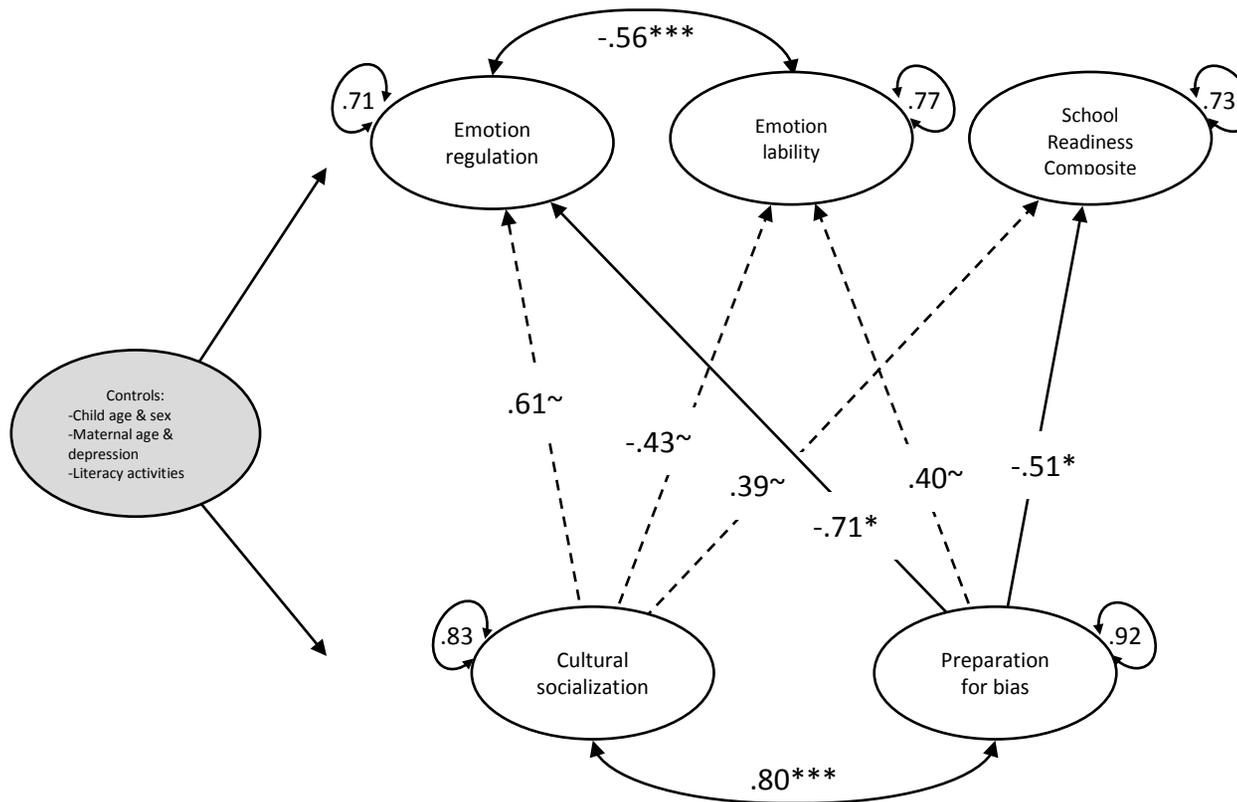


Figure 6. Full hypothesized structural model examining direct and indirect latent paths among Healthy Families intervention, early ethnic-racial socialization, and child emotional and cognitive competencies; grey lines indicate exploratory or alternative paths.



Model fit: $\chi^2 (df = 178, N = 468) = 333.67, p < .001, SRMR = .050, RMSEA = .043 (.036; .050), CFI = .920, TLI = 0.905$

Figure 7. Final conditioned latent regression model depicting standardized beta estimates of the optimal relations between cultural socialization and child competencies and non-optimal relations between preparation for bias and child competencies at Time 4. Correlated residual variances are represented by curved, double-headed arrows.

Appendix



OFFICE OF THE VICE PROVOST FOR RESEARCH

Social, Behavioral, and Educational Research
Institutional Review Board
FWA00002063

May 17, 2013 | Notice of Action

IRB Study # 0705005 | Status: ACTIVE

ATTENTION: BEFORE CONDUCTING ANY RESEARCH, PLEASE READ THE ENTIRETY OF THIS NOTICE AS IT CONTAINS IMPORTANT INFORMATION ABOUT PROPER STUDY PROCEDURES.

Title: Massachusetts Healthy Families Evaluation -2: Early Childhood Study (MHFE-2-EC)
Old Title: Massachusetts Healthy Families Evaluation -2: Impact Study

PI: Ann Easterbrooks
Study Coordinator: Jana Chaudhuri
Co-Investigator(s): Jana Chaudhuri

The PI is responsible for all information contained in both this notice of action and on the following **Investigator Responsibilities Sheet**.

Only copies of approved stamped consent forms and other study materials may be utilized when conducting your study.

The *Request for Continuing Review* has been reviewed by the IRB under the guidance set forth by the Office for Human Research Protections in 45 CFR 46, and approved under Expedited 9. Continuing review of minimal risk study.

Reviewed 5/17/2013 – Expires 5/16/2014

- Approved for 1450 participants for the duration of the study.
The following revisions were approved:
 - 1) Removal of Jayanthi Mistry and Francine Jacobs from the study.
 - 2) Minor modifications to the consent forms.
 - 3) Participants who previously completed the Time 4 Impact Phone Call will be re-contacted and re-consented before completing two brief surveys.
 - 4) Addition of a letter to be given to teachers indicating that follow-up phone calls will be made to them by researchers.
 - 5) A small percentage of phone calls will be audio recorded for quality assurance purposes.
 - 6) Minor changes to study instruments.
 - 7) Change in variables and time parameters from state agencies.

Protocol Management:

- o All translated study documents must be submitted for review, approval, and stamping prior to use.
- o For all changes to the protocol, submit: *Request for Protocol Modification* form

- o All Adverse Events and Unanticipated Problems must be reported to the Office of the IRB promptly (no later than 7 calendar days after first awareness of the problem) using the appropriate forms.
- o Six weeks prior to the expiration of the protocol on 5/16/2014, investigators must submit either a *Request for Continuing Review* or a *Request for Study Closure*
- o All forms can be found at: <http://www.tufts.edu/central/research/IRB/Forms.htm>

IRB Administrative Representative:

A handwritten signature in blue ink, appearing to read "M. LaVigne", is written over a horizontal line.



OFFICE OF THE VICE PROVOST FOR RESEARCH

Social, Behavioral, and Educational Research
 Institutional Review Board
 FWA00002063

October 10, 2013 | Notice of Action

IRB Study # 0705005 | Status: ACTIVE

ATTENTION: BEFORE CONDUCTING ANY RESEARCH, PLEASE READ THE ENTIRETY OF THIS NOTICE AS IT CONTAINS IMPORTANT INFORMATION ABOUT PROPER STUDY PROCEDURES.

Title: Massachusetts Healthy Families Evaluation -2: Early Childhood Study (MHFE-2-EC)
 Old Title: Massachusetts Healthy Families Evaluation -2: Impact Study

PI: Ann Easterbrooks
 Study Coordinator: Jana Chaudhuri
 Co-Investigator(s): Jana Chaudhuri

The PI is responsible for all information contained in both this notice of action and on the following Investigator Responsibilities Sheet.

Only copies of approved stamped consent forms and other study materials may be utilized when conducting your study.

The *Request for Protocol Modification* has been reviewed by the IRB under the guidance set forth by the Office for Human Research Protections in 45 CFR 46, and approved under Expedited 9. Continuing review of minimal risk study.

Reviewed 10/10/2013 – Expires 5/16/2014

The approved revisions are detailed below:

- 1) Minor modifications to the T4 Phone Intake in the mother protocol and T4 Less is More task in the child protocol.
- 2) Cessation of recruitment of child care providers.
- 3) Minor modifications to the consent explaining new compensation structure and the possible recording of interviews for quality assurance purposes.

- Approved for 1450 participants for the duration of the study.

Protocol Management:

- o All translated study documents must be submitted for review, approval, and stamping prior to use.
- o For all changes to the protocol, submit: *Request for Protocol Modification* form
- o All Adverse Events and Unanticipated Problems must be reported to the Office of the IRB promptly (no later than 7 calendar days after first awareness of the problem) using the appropriate forms.
- o Six weeks prior to the expiration of the protocol on 5/16/2014, investigators must submit either a *Request for Continuing Review* or a *Request for Study Closure*
- o All forms can be found at: <http://www.tufts.edu/central/research/IRB/Forms.htm>

IRB Administrative Representative Initials

Check the appropriate blank to indicate "yes," or list question numbers.

Self-administered: SI-All ___ / SI-Questions _____
 Interviewer-administered: IA- All ___ / IA-Questions _____

Participant ID _____
 Date _____
 Interviewer _____

Cultural Socialization at Home – Parent Report

We would like to ask you about the different activities you might do with your child in regards to your household, your family's background, or to your child's race/ethnicity.

We understand that some parents and children have the same race/ethnicity and some parents identify differently from their children: Here, please keep in mind questions below are about your child's race/ethnicity unless stated otherwise.

For each item below please consider if you have ever engaged in the activity with your child to date. Please do not report on your future intentions or plans- only what you have done up to today.

Have I ever...	Ever?		And if Yes, in the past year, I have done this with my child...				
	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
1. Said or done things to encourage my child to be proud of her/his cultural heritage?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
2. Talked to my child about racial/ethnic differences with her/his physical features or others' physical features?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
3. Talked about race/ethnicity with someone else when my child could hear me?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
4. Told my child stories or read my child story books involving characters who shared my child's race/ethnicity or "looked like" my child?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
5. Explained to my child something s/he saw on TV that showed poor treatment of people from her/his race/ethnicity?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
6. Talked to my child about the fight for equality among people of her/his race/ethnicity?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
7. Told my child something like "it doesn't matter what skin color a person has, what matters is what's on the inside"?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
8. Indicated to my child that s/he has to behave better and do better than kids in wealthy families to get the same respect or rewards?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
9. Indicated to my child that s/he has to behave better and do better than White kids to get the same respect or rewards?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often

APPROVED

MAY 17 2013
 Tufts SBIR IRB

MHFE-2EC/ Time 4
 Cultural Socialization (ERS)

EXPIRES

MAY 16 2014
 Tufts SBIR IRB

Check the appropriate blank to indicate "yes," or list question numbers.

Self-administered: SI-All ___ / SI-Questions _____
 Interviewer-administered: IA- All ___ / IA-Questions _____

Participant ID _____
 Date _____
 Interviewer _____

Have I ever...	Ever?		And if Yes, in the past year, I have done this with my child...				
	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
10. Talked with my child about discrimination of people based on things like skin color, accent, or traditional clothing?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
11. Told my child that all children are equal in this country?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
12. Taken my child to an event that celebrates or recognizes her/his cultural heritage?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
13. Displayed items, like artwork or figurines, in my home that are symbolic or specific to my child's cultural heritage?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
14. Told my child that other people might treat her/him differently or badly because of our family's income level?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
15. Told my child that other people might treat her/him differently or badly because of her/his race/ethnicity?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
16. Told my child that other people might try to limit her/him because of our family's income level?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
17. Told my child that other people might try to limit her/him because of her/his race/ethnicity?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
18. Talked to my child or corrected something s/he mis-learned in school about her/his race/ethnicity?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
19. Purchased clothing for my child that was popular in her/his cultural group, or, taken my child to get a hairstyle popular in her/his cultural group?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
20. Told or read my child stories about the history of her/his racial/ethnic group?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
21. Done something to celebrate the history of my child's racial/ethnic group?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
22. Made sure my child had a toy that represents her/his racial/ethnic group and/or a toy that "looks like" her/him?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often
23. Displayed photographs of my child's extended family members in my home?	No	Yes	Never	Rarely	Sometimes	Fairly Often	Very Often

MHFE-2EC/ Time 4
 Cultural Socialization (ERS)

APPROVED

MAY 17 2013
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EXPIRES

MAY 16 2014
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