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ABSTRACT. Despite growing evidence supporting the notion that fathers influence their children’s education, few studies have examined the intersection of involvement and emergent literacy development. The present study explored the ways fathers ($N=12$) support children’s literacy skills in a low-income Latino community. After completing self-report measures of daily involvement and home literacy, fathers shared a wordless book with their children. Fathers reported engaging in a variety of involvement activities, lending support to the study of fathering as a multifaceted construct. Furthermore, fathers provided rich linguistic environments during book-sharing. Trends among narrative participation scores support past literature suggesting cultural differences in narrative styles. Results provide important contributions to the limited literature on Latino parenting.

As the fastest growing minority group, Latinos now constitute over 16% of the total population of the United States (U.S. Census Bureau, 2010). The significant rise in the number of Latino families in the United States calls for special attention to these communities and the families within them. Concordantly, a small but growing body of literature exists regarding early education experiences of low-income families from diverse ethnic backgrounds. This research reports that Latino children are more likely to live in poverty than children from other ethnic and cultural groups (Espinosa, Laffey, & Whittaker, 2006) and that they tend to lag behind their peers in academic skills (Duncan & Magnuson, 2005; Espinosa et al., 2006). To understand these trends, scholars have investigated elements of the minority experience as well as environmental stressors associated with living in a low-income environment. Findings highlight the need for researchers to ground their studies in context and culture, as past research has relied on conceptualizations and measures based almost entirely on studies of middle-class European-American homes.

Recent research has identified family involvement as a key protective factor for low-income, ethnic minority youth (Jeynes, 2003). Studies have consistently shown that high levels of parent involvement are associated with high levels of social-emotional competence and academic success across ethnic and socioeconomic samples (Fantuzzo, McWayne, Perry, & Childs, 2004; McWayne, Campos, & Owsianik, 2008). Given the association between parent involvement and academic achievement and the trend of poor academic performance among Latino children in the United States, it is particularly important to understand how researchers have studied family involvement in these communities.

Although psychologists have traditionally weighed heavily on maternal influence on child development, researchers have devoted greater attention over the past three decades to the ways fathers contribute to their children’s lives. The growing number of studies investigating paternal involvement suggest that fathers make unique contributions to their children’s development and have a direct influence on young children’s overall literacy and academic achievement (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000).
2000; Coltrane, Parke, & Adams, 2004; Cornelius-White, Garza, & Hoey, 2004; Karther, 2002; Lamb, & Tamis-Lemonda, 2004; Tamis-LeMonda, Niwa, Kahana-Kalman, & Yoshikawa, 2008; Zalaquett, 2006). Although father involvement is linked to positive child outcomes, similar to the shortcomings of family involvement literature at large, the majority of research on fathers has focused on middle-class, European-American families. As a result, less is known about fathers within culturally diverse communities.

**Father Involvement**

Variously called involvement, engagement, participation, investment, childcare, and childrearing, the concept of father involvement is defined, conceptualized, and measured in a variety of ways (Palkovitz, 1997). Even when researchers agree on terminology, they show little consensus regarding just what involvement is, how to conceptualize it, how to measure it, and how to compare engagement across individuals (Palkovitz, 1997). Scholars have critiqued initial investigations of father involvement, citing fathers’ oversimplified role as a financial provider and a flawed basis of involvement on observable absence or presence (Lamb, 2000). These simplistic conceptualizations ultimately fail to capture various other components of father involvement and ignore potential barriers to a father’s participation in his children’s lives (e.g., long working hours, maternal gatekeeping). To address these limitations, contemporary researchers investigate father involvement as a multidimensional construct.

The most cited framework for describing aspects of father involvement is Lamb and his colleagues’ tripartite model of father involvement. This model defines three dimensions of involvement: *engagement* (i.e., direct interaction), *accessibility* (i.e., physical availability), and *responsibility* (i.e., accountability and assumption of caregiving; Lamb, Pleck, Charnov, & Levine, 1987). As noted by Lamb (2000), responsibility generally includes economic provisioning, but other behaviors, such as making medical appointments, grocery shopping, and coordinating children’s social activities, are also recognized within this domain, thereby addressing multiple facets of the construct. From the mass of parenting literature since the conceptualization of the Tripartite Model, it is clear that father involvement can take on a variety of forms. Scholars have defined several means of involvement and have identified various paternal roles in modern society, including caregiver, protector, teacher, disciplinarian, role model, playmate, economic provider, and companion (Day & Lamb, 2003; Day, Lewis, O’Brien, & Lamb, 2005; Hawkins et al., 2002; Lamb, 2010; Palkovitz, 1997). In addition, fathers also serve as providers of emotional and practical support for mothers and as transmitters of familial, cultural, and societal values (Lamb, 2010; Tamis-LeMonda et al., 2008). These findings illustrate fathers’ important role and have led researchers to question who exactly is a “good” father.

Over the past three decades, the idea of “good” fathering has expanded beyond fiscal success to include increased involvement in the day-to-day care of children. For example, recent research suggests that fathers often provide the basic needs of children (e.g., feeding, bathing, diapering) as well as other childrearing activities (e.g., preparing meals, doing laundry) in addition to providing financial support for their families (Lamb, 2010). Stated simply, fathering is assumed to be “good enough” when it reaches levels similar to mothering (Pleck, 2004). However, many scholars claim that the quantity of involvement is less important than the quality of involvement (Palkovitz, 1997; Tamis-LeMonda, 2004). As a result, researchers have moved away from time-based measures of involvement to focus instead on other features of father-child interaction. Supporting the idea of caregiving as an aspect of fatherhood, recent findings demonstrate that fathers play a role in emotional nurturance through affectionate activities such as kissing, hugging, and maintaining open communication with their children in addition to taking on traditional provider and companionate roles (Lamb, 2010). Thus, over time, efforts to refine the conceptualization of father involvement have occurred simultaneously with growing efforts to assess men’s unique familial contributions more thoroughly.

Contemporary empirical literature includes examinations of men’s lives, their interactions with family members, and the distributions of resources and responsibilities within the family (Bradley, Shears, Roggman, & Tamis-LeMonda, 2006; Day et al., 2005; Lamb, 2010; Tamis-LeMonda & Cabrera, 2002). As previously indicated, research suggests that fathers in the United States have evolved from the traditional fathering role of sole provider to a more nurturing, “involved” father. Furthermore, with the entrance of women into the workforce during the 1950s, fathers were expected to share the responsibilities of providing
and caring for their children with a working wife (Coley, 2001; Lamb, 2010). These changes in family structure have encouraged researchers to adjust conceptualizations of parenting. However, despite these advances, sample populations have mostly included majority members of American society, and considerably less attention is paid to diverse minority communities.

Past critiques of father involvement literature have repeatedly noted the shortage of empirical work that reflects the increasing diversity of families in the United States. As noted by Palkovitz (1997), many people still assume the roles prevalent in middle-class European-American educated families are the model for good (i.e., involved) parenting. However, attitudes concerning appropriate types and levels of paternal involvement vary considerably and are largely reflective of cultural and contextual factors (see Domenech Rodriguez, Donovick, & Crowley, 2009). It is thus critical to recognize intercultural and intracultural diversity when exploring paternal influences on child development. Although the aforementioned empirical works are important to consider in understanding Latino father involvement, recent authors have begun to explore how distinct cultural values mediate involvement among Latino fathers.

**Latino Father Involvement**

Researchers investigating fatherhood in diverse communities suggest that involvement does not simply vary by culture, but rather, culture constructs fathering (Auerbach, Silverstein, Zlotnick-Woldenberg, Peguero, & Tacher-Rosse, 2008). As such, within investigations of Latino fathers, it is crucial to recognize and identify the diversity of the Latino culture. The term *Latino* includes individuals from various cultures in North, Central, and South America. It is important to note that use of the term *Latino* is in no way meant to minimize individual heritage but rather represents the complexities of the population. Great variation exists within Latino communities regarding ethnicity, race, language, and socioeconomic status as well as specific customs and practices (Bailey, McCabe, & Melzi, 2008; Campos, 2008; Umaña-Taylor & Fine, 2001). In addition, individual and collective migration experiences account for important differences among Latino communities in the United States (Campos, 2008). Although the term *Latino* describes a highly diverse population, the term also describes a shared family value system that expands across Latino cultures (Cabrera & García-Coll, 2004; Glass & Owen, 2010; Suárez-Orozco & Páez, 2002).

Family-oriented elements of Latino culture such as *familismo, machismo,* and *respeto* suggest that paternal involvement is culturally valued. Traditionally, Latino family values define the father’s role as the breadwinner and protector of the family, thereby placing the father at the head of the household. Given this dominant position in the traditional generational hierarchy, the father earns respect from all other family members. Past researchers have recognized this unconditional respect and have used the concept of *machismo* to describe Latino masculine norms. However, researchers have focused primarily on negative aspects of these values, such as aggressive attitudes, sexism, hypermasculinity, and interpersonal dogmatism (Arciniega, Anderson, Tovar-Blank, & Tracey, 2008; Campos, 2008; Cervantes, 2006) therefore creating and confirming the stereotype of Latino fathers as controlling and emotionally unavailable. Indeed, Sánchez-Ayéndez (1988) documented that traditional Puerto Rican fathers reported strict discipline and little direct involvement in childcare. This aged depiction, however, has been challenged as being one-dimensional and ethnocentric. Current scholars suggest that Latino fathers have been studied as deviations from the European-American norm (Campos, 2008; Glass & Owen, 2010; Saracho & Spodek, 2008; Torres, Solberg, & Carlstorm, 2002).

Recent findings contest the view of Latino fathers as having limited interest and involvement, demonstrating instead that fathers within Latino communities participate in their children’s lives in various ways. Studies have shown that Latino fathers do, indeed, exhibit nurturing behaviors and partake in the day-to-day activities associated with childcare (Capps, Bronte-Tinkew, & Horowitz, 2010; Downer, Campos, McWayne, & Gartner, 2008; Landale & Oropresa, 2001; McWayne et al., 2008; Tamis-LeMonda et al., 2008; Taylor & Behnke, 2005). Furthermore, researchers have found that Latino fathers spend more time in direct interactions with their children than do their European-American and African-American counterparts (Toth & Xu, 1999). Taken together, these findings refute past stereotypical characterizations and indicate that, in addition to supporting their families financially, Latino fathers may serve as a caregiver, a playmate, a teacher, and, at times, “un amigo.”

Along with the multiple roles fathers have in their children’s lives, contemporary scholars also
suggest that gender roles have become less rigid within low-income Latino families, thereby challenging strict hypermasculine ideals. For example, the findings of Auerbach and his colleagues (2008) suggest a shift toward role sharing among Latino families in the United States, in particular, the sharing of financial responsibility. These findings demonstrate not only cooperation between Latino parents but also that the paternal role cannot be pinpointed to one specific function, monetary or otherwise. Changes in parental function also highlight the need for researchers to identify and investigate the nuanced roles Latino fathers take on within their communities. Perhaps more importantly, these findings signify the importance of socioeconomic factors in studies of fatherhood and the importance of targeting specific parent-child activities in order to understand the unique contributions fathers make to their children’s development. Interestingly, researchers suggest that Latino parents may place particular emphasis on reading and writing skills, as they see literacy as the key to upward mobility in American society (Ortiz, 2004). This finding is also underscored by the identification of emergent literacy development as a cornerstone of academic success, a critical link for better understanding the academic trends among Latino youth in the United States.

**Latino Father Involvement in Emergent Literacy Development**

Although researchers have attempted to examine fathers’ participation in early literacy development, there are few empirical studies focusing exclusively on Latino fathers. As noted by Dickinson, DeTemple, Hirschler, and Smith (1992), past researchers viewed mothers as primary caregivers and assumed that teaching young children to read and write was one item on mothers’ laundry list of responsibilities. As such, although several studies have emerged on Latino family involvement in children’s literacy development, these investigations have mostly examined maternal contributions (Ordoñez-Jasis & Ortiz, 2006; Ortiz, 2004; Ortiz & Ordoñez-Jasis, 2005). However, a few studies have emerged that document the importance of fathers in young children’s literacy experiences.

Although early empirical efforts (e.g., Laosa, 1982) illustrated that fathers spent less time in early literacy practices than mothers, recent research indicates that Latino fathers value literacy learning. Although the number of studies is small, findings suggest that Latino fathers do assume responsibility of children’s literacy development, motivate children to develop their reading skills, and participate in a range of activities that support children’s literacy (Bernal et al., 2000; Karther, 2002). Furthermore, recent qualitative investigations document that Latino fathers place heavy emphasis on their role as a teacher, role model, and educator for their children (Raikes, Summers, & Roggman, 2005). Latino fathers’ participation in early literacy ranges from parents who rarely engage in literacy activities with their children to those who establish consistent patterns of literacy development (see Saracho, 2007, for a review). In addition to variability among fathers, other findings suggest positive correlations between Latino father involvement behaviors, such as parenting style, childcare responsibilities, and child academic achievement, mirroring the results of broader parent involvement literature (see Campos, 2008, for a review). Taken together, these studies demonstrate that Latino fathers are important figures in their children’s literacy learning.

However, as Glass and Owen (2010) noted, research examining specific interactions between Latino fathers and their children is needed in order to refine researchers’ understanding and identify the precise ways fathers support children’s developing language and literacy skills. One such parent-child activity, book reading, has both a well-documented influence on children’s emergent literacy (Caspe, 2009; Duursma, Pan, & Raikes, 2008) and a recognized presence among Latino fathers and their children (Saracho, 2007). Although parent-child book-sharing is well studied within psychological research, by and large, these investigations have tended to focus on mother-child interactions.

According to the developmental literature, mothers adopt a variety of scaffolding styles when sharing books with their children (Haden, Reese, & Fivush, 1996; Melzi & Caspe, 2005; Melzi, Schick, & Kennedy, 2011). Melzi and Caspe (2005) examined the narrative styles of middle-class Peruvian and European-American mothers and identified two book-sharing styles: storytellers, who act as the sole narrator with minimal child participation, and storybuilders, who coconstruct the story with their children. Mothers also differ in the type of information they focus on, such that storytellers narrate the story with great detail, whereas storybuilders tend to relate events in the story to the child’s real-world experiences (Caspe, 2009). Research has shown similar book-sharing styles among mothers...
across various cultural groups, including African American and East Indian mother-child dyads (Hammer, Nimmo, Cohen, Draheim, & Johnson, 2005; Harkins & Ray, 2004). The recent work of Melzi and her colleagues (Melzi et al., 2011) explores a new dimension of maternal scaffolding that distinguished between maternal book-sharing styles (i.e., narrative participation) among Latino communities with various national and socioeconomic distinctions, indicating that book-sharing style might vary according to distinctive cultural traditions.

Given that many interactions are language-based, comprehending the ways parents narrate—whether telling short stories, building tall tales, or simply conversing with their children—is critical to understanding parent-child interaction. Interestingly, there is some evidence for similarities among mothers’ and fathers’ storytelling styles. Reese and Fivush (1993) examined father-child and mother-child past-reminiscing and found no significant differences between mothers’ and fathers’ narrative styles. Additionally, recent research on parent discourse suggests that mother-child and father-child conversations are quite similar in the forms and frequency of language, thus providing generally equivalent linguistic environments (Cristofaro & Tamis-LeMonda, 2008; LaBounty, Wellman, Olson, Lagattuta, & Liu, 2008; Rowe, Coker, & Pan, 2004; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004). Nevertheless, scholars have yet to explore paternal book-sharing styles, and as a result, almost nothing is known about Latino father-child book-sharing, particularly among low-income families.

The present study sought to address these gaps in the literature by focusing on father involvement and paternal book-sharing within a specific Latino community: English-speaking Latino families. As one subculture within the larger Latino community in the United States, the experiences of English-speaking Latinos are not identical to the experiences of Spanish-speaking Latinos, who tend to be recent immigrants. Of particular relevance to this study, results of a study of father-child book-sharing demonstrated that low-income fathers were more likely to read to their children frequently if they spoke English at home (Duursma et al., 2008). Researchers have also found a positive association between English language and nurturing activities for Mexican fathers (Capps et al., 2010), suggesting that some dimensions of acculturation shape parenting across different groups and may predict father involvement behaviors. Despite these advances, continued investigations are needed to understand associations between involvement routines and book-sharing among low-income Latino fathers. Accordingly, the present study was guided by the following questions: (a) How are low-income English-speaking Latino fathers involved in their children’s lives? (b) How do these fathers support their children’s developing language and literacy skills? (c) How do fathers participate in storytelling during book-sharing interactions?

Method

Participants

Twelve fathers and their children participated in this study. The dyads were recruited from Head Start centers in New York City. Since 1965, the Administration for Children and Families (ACF) has helped Head Start offer educational programs and other support services for low-income families with children age 3 to 5 (ACF, 2011). Participants were English speakers (16.7% monolingual, 83.3% Spanish bilingual). Of the bilingual fathers, five reported English as their dominant language, two reported Spanish dominance, and three reported equal use of both languages. Fathers ranged in age from 24 to 44 years (M = 31.82, SD = 7.04). The majority of the participating fathers (66.7%) were born in the continental U.S. Immigrant fathers ranged in years living in the U.S. from 6 to 28 (M = 16.75, SD = 10.44). All participating fathers identified with Latino/Hispanic culture, and 83.3% also identified with a specific nationality or cultural heritage within the larger Latino/Hispanic community (see Table 1 for a summary of fathers’ demographic information). The majority of fathers lived with their children and the participating child’s mother, with the exception of three fathers (i.e., two nonresidential fathers and one nonresidential stepfather). Fathers reported an average of 10 years of formal schooling, and the majority of fathers were employed (41.7% full-time and 33.3% part-time). One father was recently laid off and actively pursuing employment, and two fathers were not employed outside the home. All employed fathers reported providing financial support for their children, 25.0% were the lone source of income for their families, 41.6% of families had two working parents, and 8.3% of families also received financial support from extended family members.

As displayed in Table 2, the participating children included 9 boys and 3 girls, all of whom were 4 years old. Great variation existed among children’s ethnicities and family structure, reflect-
had volunteered in one of the participating Head Start centers for over a year, but fathers were also recruited at another Head Start center via research partnerships of the researcher’s mentor.

During pick-up and drop-off times at Head Start, the researcher explained to fathers that he was interested in learning more about the ways fathers participate in their children’s development, in particular how they support their developing language and literacy skills. Children were told that the researcher wanted to learn more about how fathers and children share books. The researcher also explained that the interaction would be audio- and video-recorded and that the participants had the option to review and/or delete the recordings at any point. All participating families received a $20 gift card, a coloring page, and a box of crayons. Head Start center staff members who helped with recruitment were thanked with gift cards as well.

Fathers completed a demographic questionnaire to gather basic information about the participating families. Fathers also completed a measure of involvement and a home literacy questionnaire. Lastly, fathers completed an additional account of their daily activities, which 8 (66.7%) fathers completed.

### Procedure

Recruitment of participants occurred with the help of Head Start center staff. After obtaining informed consent, fathers and children completed protocol in their homes (25%) or at their Head Start center (75%), depending on fathers and/or Head Start center staff’s comfort with the researcher visiting the participating families’ homes. The researcher

### TABLE 1

<table>
<thead>
<tr>
<th>Summary of Fathers’ Demographic Information</th>
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<tbody>
<tr>
<td>Fathers $N = 12$</td>
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<tr>
<td><strong>M (SD)</strong> Range</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>31.42 (6.85) 24-44</td>
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<tr>
<td>Formal Education</td>
</tr>
<tr>
<td>10.17 (1.53) 8-12</td>
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<tr>
<td>n (%)</td>
</tr>
<tr>
<td>Ethnicity</td>
</tr>
<tr>
<td>Belizean</td>
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<tr>
<td>1 (8.3%)</td>
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<tr>
<td>Ecuadorian</td>
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<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Guatemalan</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
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<tr>
<td>2 (16.7%)</td>
</tr>
<tr>
<td>Honduran</td>
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<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Mexican</td>
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<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Puerto Rican</td>
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<tr>
<td>5 (41.6%)</td>
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<td>Language(s)</td>
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<td>2 (16.7%)</td>
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<tr>
<td>English dominant</td>
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<td>5 (41.6%)</td>
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<td>Equal language use</td>
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<tr>
<td>Spanish dominant</td>
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<td>2 (16.7%)</td>
</tr>
<tr>
<td>Country of origin</td>
</tr>
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</tr>
<tr>
<td>8 (66.7%)</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
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<td>Fatherhood status</td>
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<td>Nonresidential</td>
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<td>Employment</td>
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<td>5 (41.7%)</td>
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<td>Part-time</td>
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<td>4 (33.3%)</td>
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<tr>
<td>Not employed</td>
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### TABLE 2

<table>
<thead>
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<th>Summary of Children’s Demographic Information</th>
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<tbody>
<tr>
<td>Children $N = 12$</td>
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<tr>
<td>n (%)</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>9 (75.0%)</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>3 (25.0%)</td>
</tr>
<tr>
<td>Ethnicity</td>
</tr>
<tr>
<td>American-Puerto Rican</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Ecuadorian-American</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
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<td>Guatemalan-American</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Hispanic-Black</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
</tr>
<tr>
<td>4 (33.3%)</td>
</tr>
<tr>
<td>Honduran</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Mexican-American</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Puerto Rican</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Puerto Rican-West Indian</td>
</tr>
<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Birth order</td>
</tr>
<tr>
<td>First born</td>
</tr>
<tr>
<td>8 (66.7%)</td>
</tr>
<tr>
<td>Second born</td>
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<tr>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>Later born</td>
</tr>
<tr>
<td>3 (25.0%)</td>
</tr>
</tbody>
</table>

ing the diversity of Latino families in the United States. The majority of children were first-born (66.7%; see Table 2), and the number of children per family ranged from 0 to 4, with an average of 1.75 in each family. On average, households had approximately 5 members, most of whom included extended family members.
after they completed paper-and-pencil measures, fathers were asked to share the wordless picture book *Frog, Where Are You?* (Mayer, 1969) with their child as they typically would share a picture book. This task has been used extensively in language research to elicit narratives from families of diverse cultural and linguistic backgrounds (see Berman & Slobin, 1994) and was especially appropriate for the present study because wordless books allow people of all literacy levels and book-sharing experience to engage in storytelling, which encouraged fathers to feel more comfortable with the task. The researcher did not interact with participants during the book-sharing activity, and there was no time limit on the interactions.

**Measures**

**Inventory of Father Involvement (IFI; Hawkins et al., 2002).** Paternal involvement was assessed with the IFI, a 26-item measure that assesses fathers’ satisfaction with their involvement in parenting along affective, cognitive, and behavioral dimensions. Related to Lamb et al.’s (1987) Tripartite Model of Involvement, the IFI includes items that reflect responsibility (e.g., “Accepting financial responsibility for children you have fathered”), engagement (e.g., “Spending time just talking with your children when they want to talk about something”), and accessibility (e.g., “Attending events that your child participates in”). Participants were instructed to rate their performance on each item over the past 12 months, on a 7-point scale, ranging from 0 (very poor) to 6 (excellent). Support for the reliability of the IFI has been noted in previous studies (i.e., Cronbach’s $\alpha = .95$ and .97; Flouri, 2004; Hawkins et al., 2002), and most recently, an investigation of Latino father involvement reported a Cronbach’s $\alpha$ of .98 (Glass & Owen, 2010). In the present study, Cronbach’s $\alpha$ was .94.

**Home Literacy Survey.** The Home Literacy Survey, an 18-item parent-report of home literacy activities and resources (e.g., number of books available in the home, father-child reading frequency, library visits), was adapted from the Administration for Children and Families (ACF) Head Start Family and Child Experience Survey (ACF, 1999) for Latino families by Schick (2011).

**Account of daily activities.** In effort to avoid confining the participating fathers’ involvement activities to those specified by empirically established measures, a time-diary task was developed by the researcher and employed in the present study. Fathers were asked to document all activities during the past 24 hr, including whether the participating child and/or any other people were present during the activity. Fathers were also instructed to note the day of the week documented, answer typicality of the day (1 = not typical, 4 = very typical), and list any other common father-child activities not previously documented or discussed.

**Transcription and Coding**

Eleven of the 12 participants completed the book-sharing interaction in English. Recordings were transcribed at the utterance level using a standardized format *Codes for the Human Analysis of Transcripts* (CHAT) available through the Child Language Data Exchange System (CHILDES; MacWhinney, 2000). Utterances were identified by grammatical closure, intonation contour, or prolonged pausing. The researcher transcribed all conversations, and transcriptions were then verified by a research partner who was also trained according to the standardized format.

Book-sharing discourse was segmented into three sections: prereading, book reading, and postreading (see Melzi & Caspe, 2005; Melzi et al., 2011). **Prereading exchanges** included all dialogue from the moment the recording began until the actual discussion of the story, including any talk about the title, author, book cover, or predictions about the story. **Book-reading exchanges** included all discussion about the pictures portraying the story. **Postreading exchanges** consisted of all father-child dialogue after the discussion of the final picture in the book (e.g., questions about whether the child liked the story or would like to read the story again). The controlled nature of the narrative task allowed for cross-comparison of narrative data. As such, discourse during book-reading exchanges was analyzed independently between and among dyads. Due to the fact that not all dyads engaged in pre- and postreading conversations, these discussions were analyzed only at the group level.

Following the coding procedures set forth by Melzi et al. (2011), paternal and child language was coded for two main narrative scaffolding variables that are critical for children’s emergent literacy development: narrative elaboration (i.e., extent to which parent requests or provides new and varied narrative information) and participation (i.e., extent to which parent conarrates the story with the child). Narrative elaboration was coded at the utterance level for pragmatic function (e.g., elaboration requests and conversational maintenance), targeting utterances containing information that
occurred in or pertained to the story world created by the pictures in the book. Narrative elaborative utterances were distinguished as either provisions (i.e., any elaborative utterance that provided new information in a declarative form, including responses and spontaneous provision of information) or requests (i.e., any elaborative utterance that elicited new information from the interlocutor, including open- and closed-ended questions and fill-in-the-blank statements). Utterances whose primary purpose was to maintain the flow of the conversation without adding any new narrative content were coded as conversation. Thus, conversation codes included utterances that served to confirm, correct, clarify, and/or repeat the reading partner’s prior utterances. Additionally, utterances that did not occur in the story world illustrated in the book (e.g., inferences about future events, general knowledge information, metanarrative talk) were coded as nonnarrative related information. Lastly, utterances that were entirely unrelated to the narrative in any way (e.g., discussion of the present or task itself) were coded as nonnarrative unrelated. Inter-rater reliability was established between two coders (i.e., the researcher and a research partner) using J. Cohen’s (1960) Kappa values. For each set of coding schemes, \( k = 0.95 \).

Narrative participation considers the conversational roles adopted by parents and their children in the negotiation of who provides narrative information. Narrative participation was assessed by the researcher through analysis of father-child discourse during each frame of the picture book. For each frame, fathers were given a score of 0 (Father as audience) to 3 (Father as narrator), depending on the amount of new narrative information they provided. The audience role represents subtle participation in storytelling, such that all or the majority of new information is provided by the child. The narrator role represents active storytelling, such that all or the majority of new information is provided by the father. Combined scores for each of the 24 frames are totaled and averaged to create a total narrative participation score.

Types of involvement were discerned according to the prevalence of specific behaviors included in the Account of Daily Activities. Each account was coded using an open-coding procedure, and codes were sensitive both to fathers’ activities and whether other family members were present during the documented activities. Consistent with Miles and Huberman’s (1999) recommendations, inter-rater reliability was calculated using the formula: Inter-rater Reliability = Agreement/(Agreement + Disagreement). The rate of reliability for this study was 95%. Additionally, the ways fathers supported specifically children’s emergent literacy development were investigated through exploration of involvement dimensions in relation to different features of the father-child book-sharing task.

Results

Preliminary Analyses

Although the present study was initially designed to allow for quantitative analyses, the challenges of community-based research called for a more qualitative approach, which encouraged greater depth in the exploration of the data. For the purpose of this paper, however, basic statistical procedures were run when possible. Accordingly, patterns in the data were investigated to explore the aims of the study: (a) identify involvement routines among low-income Latino fathers, (b) explore paternal support of emergent literacy development, and (c) investigate aspects of storytelling during father-child book-sharing interactions.

Identification of Father Involvement Routines

To assess how low-income English-speaking Latino fathers were involved in their children’s lives, data were described and comparisons were drawn between the Account of Daily Activities, IFI, and Home Literacy Survey. Fathers were found to adopt several involvement routines and engage in a variety of activities with their children regularly. Activities ranged in type from basic childcare (e.g., helping children get ready for school) to completing household chores and playing around the house. For a summary of the fathers’ daily activities, see Table 3.

As a group, fathers engaged most frequently in provider role and basic childcare activities. Consistent with their reported role as breadwinners, 48% of fathers’ activities were classified as working or engaging in other household/provider routines. Basic childcare, the second most frequent activity, accounted for 18% of fathers’ reported activities, indicating that childcare routines made up a substantial proportion of a father’s day. However, individual variability in involvement was reported, and fathers differed both in amount and type of involvement.

To assess involvement beyond that documented in the time diary, father involvement and home literacy scores were computed from the IFI
and Home Literacy Survey, respectively. Father involvement and home literacy were strongly correlated, $r(10) = .73$, $p < .01$. Table 4 displays descriptive statistics for the IFI. It is interesting to note that subscales of Discipline and Teaching Responsibility ($\alpha = .94$), Providing ($\alpha = .98$), Time and Talking Together ($\alpha = .83$), Praise and Affection ($\alpha = .94$), Developing Talents and Future Concerns ($\alpha = .91$), Reading and Homework Support ($\alpha = .93$), School Encouragement ($\alpha = .65$), Mother Support ($\alpha = .36$), and Attentiveness ($\alpha = .69$) achieved acceptable levels of reliability, whereas subscales of School Encouragement, Mother Support, and Attentiveness did not. Given the small sample size, further quantitative analyses (e.g., effects of demographic variables on involvement) were not conducted, bypassing the impact of these questionable reliability levels on other findings.

**TABLE 3**
Summary of Fathers’ Daily Activities by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Activities</th>
<th>% of Total Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household/Provider role</td>
<td>Working, grocery shopping and other errands, cleaning and other chores around the house including fixing appliances, and shoveling outdoors</td>
<td>48%</td>
</tr>
<tr>
<td>Basic childcare</td>
<td>Helping child with his/her morning/nighttime routine (e.g., get up, bathe, dress/undress, get ready for bed), making and/or eating food as a family, picking up and/or dropping off child at school</td>
<td>18%</td>
</tr>
<tr>
<td>Entertainment/Play</td>
<td>Playing with toys, hide and seek, running around in or outside, listening to music and dancing, watching children’s TV, video games, going to the park</td>
<td>13%</td>
</tr>
<tr>
<td>Educational</td>
<td>Read books, practice writing, drawing, helping with homework, volunteering at Head Start</td>
<td>10%</td>
</tr>
<tr>
<td>Social</td>
<td>Visiting other family members outside the home, attending community gatherings</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>Calling from work</td>
<td>5%</td>
</tr>
<tr>
<td>Self-care</td>
<td>Morning routine, watching TV/movies (except children’s shows), sleeping/napping, making food for self, eating alone</td>
<td>0%</td>
</tr>
</tbody>
</table>

*Note. Self-care activities were excluded from the total percentage of fathers’ daily activities in order to better represent the proportion of activities fathers devoted to their families.*

**TABLE 4**
Descriptive Statistics for the Inventory of Father Involvement

<table>
<thead>
<tr>
<th></th>
<th>$M$ (SD)</th>
<th>$\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory of Father Involvement</td>
<td>5.42 (0.64)</td>
<td>.94</td>
</tr>
<tr>
<td>Discipline and Teaching Responsibility</td>
<td>5.11 (1.24)</td>
<td>.94</td>
</tr>
<tr>
<td>Providing</td>
<td>5.45 (0.96)</td>
<td>.98</td>
</tr>
<tr>
<td>Time and Talking Together</td>
<td>5.41 (0.74)</td>
<td>.83</td>
</tr>
<tr>
<td>Praise and Affection</td>
<td>5.47 (0.83)</td>
<td>.94</td>
</tr>
<tr>
<td>Developing Talents and Future Concerns</td>
<td>5.11 (1.18)</td>
<td>.91</td>
</tr>
<tr>
<td>Reading and Homework Support</td>
<td>5.33 (0.93)</td>
<td>.84</td>
</tr>
<tr>
<td>School Encouragement</td>
<td>5.69 (0.43)</td>
<td>.65</td>
</tr>
<tr>
<td>Mother Support</td>
<td>5.69 (0.36)</td>
<td>.55</td>
</tr>
<tr>
<td>Attentiveness</td>
<td>5.50 (0.69)</td>
<td>.73</td>
</tr>
</tbody>
</table>

*Note. IFI scores range from 0 (very poor) to 6 (excellent).*

reported reading to their children. The majority of fathers (75%) reported that their children’s mothers also engaged in book reading, and two reported that other family members (e.g., older siblings, extended family members) also read to their children in the home. See Table 5 for a summary of findings. It is also important to note that the Head Start center from which the majority of participants were recruited issued children’s books to families for “weekend reading.” A number of fathers talked about sharing these books in particular with their children.

In addition to sharing books, fathers also reported engaging in literacy activities such as watching educational TV, practicing writing words and numbers, talking about Head Start, and singing songs. Similar to occurrence of book-sharing, the frequency of these activities varied among fathers, but the design of the present study prevented a statistically significant explanation of these findings with regard to involvement and demographic variables. Patterns did emerge, however, as all fathers who reported engaging in educational routines within their account of daily activities were residential. Additionally, two of these three participants were fathers of girls, a finding that may be important because 75% of the sample had sons. Lastly, and of particular interest to this study, all of the fathers who reported engaging in educational activities during the daily routines were bilingual (one reported English dominance, one reported Spanish dominance, and one reported equal language use in the home).
Identification of fathers’ narrative participation during book-sharing. Paternal discourse during book reading ranged from 106 to 230 utterances, for an average of 178 ($SD = 37.54$) and a mean length of utterance (MLU; ratio of words to utterances) of 3.99 ($SD = 0.34$). In addition to differences of narrative length, fathers engaged in book-sharing in unique ways while providing rich linguistic environments for their children. Controlling for the amount of conversation, analysis of the type, and frequency of fathers’ narrative discourse features suggested that the majority of fathers in the sample tended to adopt narrative styles that encouraged greater narrative provision and required less input from children. Accordingly, children also differed in discourse during the book-sharing interaction but tended to engage in nonnarrative conversation most often.

As previously discussed, fathers tended to act as the sole narrator and seemed to encourage little participation from their child beyond that of simple conversation. However, some fathers displayed a greater tendency to share the role as narrator and coconstructed the story with their children. In conjunction with these differences, fathers also differed in the type of information on which they focused, such that some fathers described the story with great detail, whereas others tended to refer back to the child’s real-world experiences or the present itself. The following excerpts provide an example of the observed differences among fathers’ storytelling participation. Both excerpts refer to the same frame of the story, in which the boy is looking for his frog inside a tree, while the dog runs away from the beehive he presumably knocked down. The first excerpt demonstrates a style of narration with limited child participation. The second excerpt demonstrates a style of narration that includes active storytelling from the child.

**Excerpt 1**

**Father:** So, the boy yelled into the tree, and the owl came out.

**Father:** The kid fell.

**Father:** And the dog runs by with the bees behind him.

**Father:** You see that?

**Child:** Yeah.

**Excerpt 2**

**Father:** So, then he looked there and—Oh snap! A owl comes out of the tree! And what happened?

**Child:** Yeah! Then the boy falls.

**Father:** Yeah, and the owl scares the boy so the boy falls.

**Child:** Yeah, but he’s okay.

**Father:** You remember when you fell?

**Child:** Yeah.

**Father:** Just like the boy, he fell, right?

**Child:** Yeah.

**Father:** So the boy keeps lookin’ for his frog. And the dog runs by as the bees are chasin’ him.

**Child:** Yeah, they could sting.

**Father:** That’s right, they could sting! He better be careful.

As demonstrated by the excerpts, storytelling styles varied among fathers and their children: Some fathers encouraged active participation from their children, whereas others did not seek the child’s contributions to the story. Analysis of narrative participation offered further explanation of these tendencies.

The ways fathers and their children participated in narrative discourse was explored through examination of the shift between narrator and audience roles throughout the story (i.e., narrative participation). As displayed in Figure 1, narrative participation scores ranged from 45.84 to 72.00 ($M = 59.17$, $SD = 7.68$). Spanish-dominant bilin-
gual fathers tended to have the highest narrative participation scores, followed by English-dominant and equal-language fathers. Monolingual English speakers tended to score lower on narrative participation than fathers of other language groups. All fathers with scores above the median for narrative participation were below the mean age. No trends were observed among country of origin, residential status, birth order, or child gender.

As a group, father-child discourse during pre- and postreading mostly included conversations about the task or the present itself. During prereading, 3 fathers read the title of the book aloud and described the cover to their child, inferring the plot of the story. During post-reading, 4 fathers also reviewed the story with their child and asked questions that tested story comprehension (e.g., “So, what happened in this story?” “Where did the frog go?”) and inquired about opinions (e.g., “Did you like the story?” “What did you like about the story?”). Additionally, three fathers asked their child if they would like to read the story next time, suggesting that fathers may take on narrator roles during the initial read, but that roles may shift in subsequent revisits to the same children’s book.

To investigate a relation between different involvement routines and features of storytelling, the data collected from three participants were explored further. These participants were selected for additional analysis, given complete data profiles (i.e., completion of all measures and tasks) and their reported engagement in educational routines within the daily activities log. Exploratory analyses suggested that fathers who engaged in educational activities tended to have higher narrative participation scores. The exploratory nature of this study prevents more substantial results, but findings are encouraging for future researchers to investigate a relation between involvement activities and paternal book-sharing styles.

**Discussion**

Few studies have examined the intersection of father involvement and children’s emergent literacy development, particularly among culturally diverse populations. Accordingly, the main objective of the present study was to explore the ways low-income Latino fathers support their children’s literacy skills. Concurrent with recent research on father involvement, the results of this study provide further support for the multidimensionality of father involvement, especially among a population as diverse as the sample. Furthermore, fathers’ interest in and support of children’s emergent literacy development was evident, a salient contribution to the limited literature on low-income Latino fathers in the United States.

The variety of involvement routines and variability among the frequency and type of daily activities supports the notion of fathering as a multifaceted construct. Far from past stereotypical depictions of Latino fathers as uninterested and uninvolved, the participants in this study contributed actively to childrearing, demonstrating both care and concern for their children beyond assuming financial responsibility alone. This finding stands in stark contrast to Sánchez-Ayéndez’s (1988) suggestion that Puerto Rican fathers offer little direct involvement in childcare. Given the reported involvement of fathers who identified as Puerto Rican in this sample, it stands to reason that the discrepancy between findings may indicate generational differences in the ways fathers care for their children. However, due to the small sample size of the present study, these statements are made with caution.

Although concrete trends were not observed with regard to home literacy activities, findings supported the view that fathers take an interest in their young children’s development in a variety of ways. Consistent with past literature (Ordoñez-Jasis &
Ortiz, 2006; Ortiz & Ordoñez-Jasis, 2005; Saracho, 2007), Latino fathers’ participation in early literacy varied among individual parents. From partaking in the day-to-day activities associated with childrearing to reading books at bedtime, it is clear that contributing to children’s development is an important aspect of Latino fathering; a finding that further emphasizes the suggestions of other recent involvement research (Capps et al., 2010; Downer et al., 2008; McWayne et al., 2008; Tamis-LeMonda et al., 2008). Furthermore, the results of the present study suggest that higher total involvement is correlated with higher home literacy. Thus, emphasizing the important role fathers play in child development may serve to promote home literacy as well. These suggestions align with researchers (Bernal et al., 2000; Karther, 2002) who have found that Latino fathers do assume responsibility of children’s development and participate in activities that support literacy. Fathers are certainly important figures in their children’s lives, but the extent to which involvement routines are influenced by the roles adopted by other caregivers remains unclear. In support of Raikes and colleagues’ (2005) finding that low-income Latino fathers place heavy emphasis on their role as a role model and an educator for their children, IFI dimensions regarding teaching and educational support demonstrated high scores and high reliability among the participating fathers. Considering the variability present among several other dimensions of the IFI, however, researchers should be cautioned when applying this measure to diverse populations.

The presence of IFI dimensions (e.g., mother support and attentiveness) that were not reliable may indicate that some aspects of Latino father involvement may not be adequately captured by the measure, despite its empirical validity. It is important to note that Hawkins and colleagues (2002) developed this measure using a sample that grossly underrepresented fathers from diverse ethnic minority and socioeconomic groups (e.g., only 28 of the 723 participants in the original study were Latino), an important fact for future researchers who seek to eschew maintaining the unfortunate trend in empiricism wherein psychometric properties are confirmed at the expense of cultural competency. Furthermore, these internal inconsistencies might suggest that the culturally-sponsored activities fathers engage in may overlap with mothers or other caregivers’ responsibilities. As parenting research suggests, these roles vary as a function of culture. Thus, the roles and responsibilities assumed by mothers and/or other caregivers (e.g., grandparents, older siblings, aunts, uncles) may influence paternal involvement routines. The effects of these relationships and other family dynamics were beyond the scope of this study and remain open for future researchers to investigate.

As with all empirical work, the present study contains several limitations beyond those inherent in exploratory design. First, selection bias should be taken into account, given the researcher’s position as a Head Start volunteer combined with the fact that all men who participated in the study chose to do so and therefore might be considered involved with their children relative to those fathers who did not participate. However, even within this sample of involved fathers, great variation in reported involvement existed across several dimensions.

A larger study would have allowed for analysis both between and within groups on the basis of key demographic factors. Furthermore, studies that account for participants’ ethnic identity and acculturation are needed in order to better understand Latino father involvement. This suggestion echoes D. Cohen’s (2007) important reminder that people of any given ethnicity do not necessarily identify with their culture to the same degree. These concepts are particularly important when studying a people as diverse as Latinos in the United States. The demographics of this sample alone reveal many differences among how Latino men classify their ethnicity, from men who embrace a Latino/Hispanic identity to men who stand by their family’s specific cultural heritage. Explanation for these within-group differences are left for future ethnic identity researchers to elucidate.

These considerations may be especially important for the study of fathering, as according to Glass and Owen (2010), Latino father involvement may vary on the basis of cultural and gender norms, acculturation process, and ethnic identity. The nature of the current study did not permit exploration into how Latino cultural values are met with mainstream American parenting norms. However, in light of the narrative participation trends regarding language use (an indicator of acculturation) and age (an indicator of generational status), future studies should account for the complex relations among these factors. By failing to do so, researchers may miss the ways cultural and generational value systems influence involvement and child development in diverse populations.

Future work that builds on the present study should take these factors into consideration in
order to contribute to the psychological literature on low-income Latino men. By and large, family researchers have noted the difficulty of recruiting fathers to participate in their studies, whether through direct commentary or indicated by a lack of fathers represented in studies of family involvement. Given the documented difficulty in recruiting participants among these communities (Domenech Rodríguez, Rodríguez, & Davis, 2006), researchers should establish partnerships with community members and expand recruitment efforts beyond traditional educational settings, such as schools and libraries. For example, many of the fathers in this study reported frequently taking their children to the park or playground during spring, summer, and fall seasons, particularly on the weekends. Hence, researchers should adjust recruitment strategies accordingly if larger, more representative samples are desired.

In response to the literature documenting the challenges faced by low-income Latino children in the American education system, researchers need to consider all aspects of the home environment in order to better understand these children’s educational experiences. Although past researchers have focused mostly on maternal contributions or family involvement in general, studies focusing on the unique contributions fathers make are much needed. Findings of this study, however limited, support the view of fathers as important figures in their young children’s literacy development. For example, the reported frequency of book-sharing and other activities that support literacy learning indicate fathers play a role in facilitating children’s early learning. Clearly, continued research is needed to build upon these exploratory findings and explain the effects of their unique contributions. For example, studies focused solely on paternal narrative styles will explain better the roles fathers adopt in telling stories to their children and how these roles relate to academic success.

Developmental researchers have repeatedly studied storybook reading as a cornerstone of children’s literacy. Findings demonstrate that different dimensions of maternal scaffolding styles support different critical skills for children’s early literacy development and contribute to academic success (Melzi et al., 2011), but researchers have yet to determine where fathers fall in this equation. Given the academic challenges Latino children in the United States face as they begin formal education, researchers should consider devoting greater attention to the ways fathers’ narrative styles contribute to literacy skills, such as letter recognition, vocabulary, and story comprehension skills. Considering the advances made by researchers of mother-child dyads, filling these gaps in the literature may be as simple as widening the participant pool to include the other half of the homestead.

Despite the variability in the present sample, narrative styles similar to those described by Melzi and her colleagues (Caspe & Melzi, 2008; Melzi & Caspe, 2005; Melzi et al., 2011) were observed. Trends among the participants of the present study suggest that fathers may adopt narrative styles similar to those endorsed by mothers of various cultural backgrounds. As previously noted, research on Dominican, Mexican, and Peruvian mothers of various socioeconomic backgrounds suggest that Latino mothers tend to adopt the sole narrator role (Caspe, 2009; Caspe & Melzi, 2008; Melzi & Caspe, 2005; Melzi et al., 2011). The practical implications of these results are important given Caspe’s (2009) finding that the children of sole-narrator mothers had higher emergent literacy skills. The present study’s finding that Spanish dominant bilingual fathers tend to have higher participation scores than monolingual English fathers corroborates past research on Latino mothers and may be especially important given the recent documentation of the importance of narrative participation among mothers and their children (Melzi et al., 2011).

As previously mentioned, there is some evidence for similarities among mothers’ and fathers’ storytelling styles in past reminiscing (Reese & Fivush, 1993). However, language researchers have yet to devote enough attention to fathers in order for this conversation to continue much further. In sum, several questions remain unanswered, such as whether mothers’ and fathers’ book-sharing styles are complementary, and how parental narrative styles may combine to supporting children’s literacy skills. The present study offers findings to encourage future studies focused on fathers and their children. Given these new directions, future researchers will be better equipped to investigate relations between paternal book-sharing and children’s literacy development.

References


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Automated systems for judging the world have evolved over the course of evolutionary history. Previous studies have shown that unconscious processes may be adaptive under many circumstances (for a recent review see Dijksterhuis & Aarts, 2010); however, they can equally be inaccurate and, instead of promoting survival, lead to prejudice.

An example of an implicit assumption, and the one used in this study, is that the concept of family is more closely related to women than to men, and that men, on the other hand, are schematically associated to the concept of career (Nosek, Banaji, & Greenwald, 2002). To a certain point, the findings of social psychology support these preconceptions. Research has shown that women's connections as mothers, daughters, sisters, and grandmothers bind families (Rossi & Rossi, 1990) and that women spend more time caring for both preschoolers and aging parents (Eagly & Crowley, 1986). For women especially, a sense of mutual support is crucial to marital satisfaction (Acitelli & Antonucci, 1994). On the other hand, in conversation, men's style often do: talking assertively, interrupting intrusively, touching, staring more, and smiling less (Anderson & Leaper, 1998). Although the research cited supports the bias that people show in associating women with family and men with careers, most people in the 21st century (especially young college students) deny that they think in this fashion when probed explicitly (Nosek et al., 2002).

Now, findings show that implicit and explicit attitudes belong to distinct dimensions of cognition and therefore can differ (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). Wilson's theory on dual attitudes affirms that even though explicit attitudes may vary, implicit attitudes, such as old habits, change more slowly (Wilson, Lindsey, & Schooler, 2000). In the last decade, the field of personality measurement assessment has developed procedures that are free from the limits of explicit questionnaire measures and that are suitable for the assessment of implicit self-representations. Chronometric procedures, such as the Implicit Association Test (IAT; Greenwald & Banaji, 1995), are examples of such techniques.

**Can Multilingualism Deter the Effect of Implicit Misleading Cues?**

Jean-Paul Noel
Gustavus Adolphus College

**ABSTRACT.** Multilinguals appear better able than monolinguals to suppress implicit misleading cues that lead to misguided associations. This study induced participants \(N = 108\), weakly and strongly, to misguided association. The hypothesis of the experiment was that monolinguals and multilinguals would not differ in the amount of misguided associations expressed when stimuli induced misguided association weakly, through priming, but that they would differ (multilinguals showing fewer) when it induced associations strongly (through the IAT). The results confirmed the hypothesis, providing evidence for the conjecture that multilingualism does deter the effect of implicit misleading cues. Because of the quasi-experimental nature of this study, its conclusions remain open to further examination.

AbstrACt. Multilinguals appear better able than monolinguals to suppress implicit misleading cues that lead to misguided associations. This study induced participants \(N = 108\), weakly and strongly, to misguided association. The hypothesis of the experiment was that monolinguals and multilinguals would not differ in the amount of misguided associations expressed when stimuli induced misguided association weakly, through priming, but that they would differ (multilinguals showing fewer) when it induced associations strongly (through the IAT). The results confirmed the hypothesis, providing evidence for the conjecture that multilingualism does deter the effect of implicit misleading cues. Because of the quasi-experimental nature of this study, its conclusions remain open to further examination.
The idea underlying response latency measurement techniques, such as the IAT, remains the same as proposed by Donders in the mid-19th century. The easier a mental task is, the quicker the decision is made. Evidence for the success in assessing meaningful constructs that are difficult to record with self-reports is implied by the finding that implicit measures often show rather low correlations with explicit measures (Blair, 2001), yet reliably predict behavior (Asendorpf, Banse, & Mücke, 2002).

Studies have shown that multilinguals are able, in certain domains, to ignore explicit cues. The question remains, however, as to whether they can ignore implicit cues as well. According to Bialystok and Hakuta (1994), the knowledge of two languages is greater than the sum of its parts. The benefits of being multilingual go beyond simply knowing two languages. Multilinguals develop cognitive abilities that allow them to outperform monolinguals in tasks that require inhibitory control to ignore misleading perceptual cues (Martin-Rhee & Bialystok, 2008), control of processing (Bialystok, 1986), and seeing alternative meanings to reversed images (Bialystok & Shapero, 2005). These results suggest that multilinguals have an advantage over monolinguals in tasks based on cognitive interference and attention.

Bialystok (1999) hypothesized that the ability to hold two languages in the mind at the same time, without allowing words and grammar from one language to slip into the other, might account for the greater cognitive control showed by multilinguals. Likewise, according to Green’s (1998) Inhibitory Control Model, different languages are represented by different language schemes; the use of one language involves inhibitory control over the interfering nontarget language. Furthermore, this model explains that switching between languages requires an advanced cognitive capacity. Multilinguals unconsciously practice this inhibitory control and therefore further develop certain executive functions; the development of the executive function in multilinguals children is as early as 3 years of age compared to monolingual children at 4–5 years of age (Bialystok, 1999). In short, literature implies that continued need to control the activation of two languages in a single cognitive system leads to a more efficient executive control system in multilinguals relative to monolinguals.

Furthermore, Ianco-Worrall (1972) reported that multilingual children realize the arbitrary relations between words and the objects they represent earlier than monolingual children. In other words, multilingual environments facilitate symbolic flexibility because multilingual children grow up with at least two different symbols for the objects in their world (Ianco-Worrall, 1972).

It is reasonable to believe that, in general, multilinguals could have fewer prejudices than monolinguals. This possible difference could be attributed to an education that has clearly emphasized the diversity existing in the world or because multilinguals may be more prone to having a lifestyle promoting tolerance. If multilinguals did have fewer prejudices, multilinguals would make fewer erroneous implicit associations compared to monolinguals, irrespective of the strength with which misguided associations were elicited. Both monolinguals and multilinguals would show proportional increases, or decreases, in misguided associations as a consequence of methodological alterations (Explanation 1). An alternative hypothesis is that multilinguals could only express less prejudice, but, in fact, unconsciously possess similar levels of misguided associations as monolinguals do. A hypothesized reduced level of expression of prejudice by part of multilingual subjects would reside, therefore, in their ability to ignore these implicit associations. In this case, it would be expected to see disjointed growth in the prejudice expressed by monolinguals and multilinguals as inducement to misguided associations increased in strength. The stronger the inducement to prejudice, the greater the opportunity for expression of multilinguals’ ability to ignore implicit misleading cues (Explanation 2). This second alternative echoes Devine’s models of prejudice (Devine, 1989), in which the difference between high- and low-prejudice perceivers lies in the ability of the latter to suppress stereotypes.

We tested the implicit prejudice of monolinguals and multilinguals by varying the strength with which we induced misguided associations. We hypothesized that when the task induced prejudices in a weak manner, monolinguals and multilinguals would not show differences in the reaction time required to classify a certain target word under its correct category; but, when the task induced prejudices with more strength, multilinguals’ reaction times would be faster than those of monolinguals.

The study consisted of three phases, each represented by an experimental block. The combination of these three phases allowed, not only for the measure of prejudices, but also for discrimination between Explanation 1 and Explanation 2.
In two of the blocks, participants were primed before the categorization of a certain target word. In one case, the priming words were neutral, not causing any added difficulty to the task (control condition), however, in the other case, the priming words elicited prejudice by priming participants with meaningful words with respect to the prejudice tested. No significant difference was expected between groups in these two phases, because the inducement to prejudice was fairly weak, and therefore multilinguals’ hypothesized ability to ignore misleading cues should express in a negligible manner. However, we expected that both groups would experience a greater difficulty in assigning words to their respective categories when presented with prejudice primes, in this manner verifying the priming methodology—standard priming being weaker than IAT inducement.

In a final block, the IAT phase, participants carried out a modified version of the Gender-Career IAT (www.implicit.harvard.edu). This task elicits prejudice as priming does. However, in this case, the inducement to misguided association is stronger than in the case of priming. Therefore, it is hypothesized that in this phase, multilinguals’ hypothetical ability to ignore implicit misleading cues should become apparent, measurable. In other words, monolinguals should show a sharper increase in reaction times between the priming and IAT phases, than the multilinguals should. Figure 1 illustrates this experimental design.

Method

Participants

Two sets of participants took part in this study. The first set was 68 (28 multilingual and 40 monolingual) undergraduate students at a small liberal arts college in the United States, who received credit for an introductory course in psychology in which they were enrolled. Monolingualism was defined as not speaking a second language at home or having taken less than 3 years of a second language at school. Multilingualism, for this first set of participants, was defined as having more than 6 years of a second language taught at school or speaking a second language at home. These boundary definitions were delimited after surveying the potential sample pool of participants on their experience with plurilingualism. Boundaries were established to guarantee an appropriate final sample size, while keeping groups as distinct as possible. Participants with 3 to 6 years of a second language were restricted from participation.

The remainder of the participants were 41 (for a total of 109) first- and second-year university students in Barcelona, Spain; they were all alumni from a French high school in Barcelona and, therefore, at least fluent in Spanish and French. Most of these participants were also fluent in Catalan and had proficiency in English. Results from the multilinguals from the United States and multilinguals from Spain were compared and, because they showed the same trend, combined. Only one of the participants (a male multilingual) had had a prolonged stay in another culture, and his data were therefore excluded from analysis.

Participation required approximately 15 min. All the participants completed the experiments on the same computer and screen model.

Stimulus/Apparatus

Participants completed, in a random order, three blocks of categorizations (neutral priming, prejudice priming, and IAT) in which they had to associate a certain target word with one of two possible categories presented. Reaction times were recorded. Each block consisted of 72 trials and differed from the other blocks in respect to the type of priming and the two possible labels under which categorization could be made.

In the neutral priming block, participants were presented with the categories Family and Career in half the trials, and with Male and Female in the rest. These labels appeared in the top corners of the screen in black Courier New, size 18. The priming words used for this block were Plane, Package, Bottle, Internet, Paper, and Chair. The priming words appeared in the center of the screen in a black Courier New, size 36 font, for 16 ms. Following the priming word, the program presented a mask composed of eleven Xs in black Courier New, size 40. This mask also appeared in the center of the screen for 16 ms. The neutral priming block, therefore, primed participants with nonmeaningful words with respect the prejudice being tested and served as a baseline. The target words, presented in Table 1, were shown subsequently to the priming words in the lower portion of the screen in black font Courier New, size 18. All target words used were similar in length and common in both English and Spanish.

The prejudice priming block was identical to the neutral priming block with the exception of the words presented as prime words. In this case, when first names were used as target words, career/family words were used as priming words, and vice-versa.
For instance, when the categories Male and Female were presented and participants had to categorize a certain male name under its corresponding label, a Family word would be used as prime. Similarly, when a Career target word was presented, a female name would be the prime eliciting prejudice. Programming was done so that the prime word would always be inconsistent with the target word. In this way, the prejudice priming block challenged participants in making correct associations.

The final block was a replication of the Gender-Career IAT. In this case, each category was composed of two labels, either congruent or incongruent. The congruent categories were Male and Career versus Female and Family, and the incongruent categories were Male and Family versus Female and Career. In this case, no priming was performed. This block was intended to elicit prejudice in a stronger manner than the prejudice priming block (IAT incongruent), but also to serve as a baseline for IAT (IAT congruent).

The background of the screen was white, and the target word was presented for as long as the response took. If the answer was incorrect, the program did not record that action and waited until the subject gave the correct response. The program presented the next trial immediately after recording the correct response.

To control for handedness, one of two versions of the same program was randomly assigned to each participant. The two versions of the program presented the labels in different corners of the screen and therefore required opposite motor responses to convey the same conceptual message.

### Procedure

Participants sat in front of a computer and initiated the program, which presented the instructions. Participants saw a target word at the same time the labels of the categories appeared at the top corners of the screen. In order to associate the target word with the category at the right, participants pressed the *k* key on the keyboard. If, on the contrary, the participant wanted to categorize a word under the label that was on the left top corner, he/she pressed the *s* key.

### Results

An independent-samples *t* test tested the difference in reaction times between the monolinguals (*n* = 48) and the multilinguals (*n* = 60) within the neutral priming block. Mean reaction time was determined for both groups; monolinguals (*M* = 718.80, *SD* = 116.90) and multilinguals (*M* = 703.98, *SD* = 98.10) showed no significant
A 2 (group) x 2 (priming condition) mixed factorial ANOVA was used to determine if there were any differences in reaction times between the priming conditions (neutral vs. prejudice) for both monolinguals (n = 48) and multilinguals (n = 60). The average reaction time for the prejudice priming condition (M = 763.86, SD = 144.10) was slower than the average reaction time for the neutral priming condition (M = 711.30, SD = 107.50), F(1, 106) = 17.60, p < .001, d = 0.47. The interaction between the type of priming and group as either monolingual or multilingual was not significant, F(1, 106) = .65, p = .42. When primed with prejudiced words, monolinguals (M = 781.41, SD = 159) and multilinguals (M = 746.31, SD = 129.20) did not differ in reaction times, F(1, 106) = 1.68, p = .19.

A within-subjects t test confirmed that the difference in reaction times between the IAT congruent (M = 845.6, SD = 175.41) and IAT incongruent (M = 939.6, SD = 198.70) trials was significant, t(106) = 34.51, p < .001, d = .50, hence confirming that the IAT-incongruent condition did indeed elicit prejudice.

Additionally, a paired-sample t test confirmed that the mean reaction time for the IAT incongruent (M = 939.63, SD = 198.75) was significantly slower than the mean reaction time for the priming condition that elicited prejudice (M = 763.80, SD = 144.10), t(106) = 133.63, p < .001, d = 0.1. Furthermore, a mixed factorial ANOVA established that there was no significant interaction (in terms of reaction times) between the method of prejudice inducement utilized (priming or IAT) and group (monolingual or multilingual), F(1, 106) = 1.35, p = .24. These results support the assertion that the IAT elicited prejudice more strongly than priming did.

The difference between neutral priming and prejudice priming and the difference between IAT congruent and IAT incongruent were calculated. These two differences give the net amount of prejudices elicited by the priming and the net amount of prejudice elicited by the IAT, respectively. As illustrated by Figure 2, the net amount of prejudice elicited by the IAT was greater (M = 94.31, SD = 176.10) than the net amount of prejudice elicited by the priming condition (M = 11.84, SD = 119.90); this difference was significant as determined by a 2 x 2 mixed ANOVA, F(1, 106) = 16.10, p < .001, d = 0.54. Additionally, the net amount of prejudice elicited by these techniques was significantly different for the multilinguals (M = 11.27, SD = 143.50) compared to the monolinguals (M = 94.88, SD = 152.50), F(1, 106) = 16.47, p < .001, d = 0.56, and the interaction (task-plurilingualism) was significant as well, F(1, 106) = 14.36, p < .001.

The priming condition did not elicit a significantly different amount of net prejudice between the monolinguals (M = 14.69, SD = 125.62) and the multilinguals (M = 8.99, SD = 114.38), t(106) = .24, p = .80. On the other hand, the difference in net amount of prejudice elicited by the IAT condition between the monolinguals (M = 175, SD = 179.40) and the multilinguals (M = 13.55, SD = 172.87) was significant, t(106) = 4.74, p < .001, d = .91. Within the multilinguals, there was no difference between the net amount of prejudice elicited by priming (M = 8.99, SD = 114.30) and the net amount of prejudice elicited by the IAT condition (M = 13.55, SD = 172.80), t(59) = .18, p = .85. Finally, the difference of net amount of prejudice elicited within the monolinguals by the priming condition (M = 14.69, SD = 125.60) and by the IAT condition (M = 175.07, SD = 179.40) was significant, t(47) = 4.80, p < .001, d = 1.03. This finding shows that the ability to ignore the implicit misleading cues that induced prejudice remained unchanged for the multilinguals independently of the strength of prejudice inducement. On the contrary, monolinguals’ performance was further challenged under the IAT condition, as compared to the priming condition.

![Figure 2](image-url)
Multilingualism Effects | Noel

Discussion
The results showed that both monolinguals and multilinguals had less difficulty associating words with their categories when they were primed with nonmeaningful words with respect to the prejudices tested than when they were primed with meaningful words with respect to the prejudice tested. This finding shows that the priming did elicit prejudice. The results also showed that, as expected, the IAT elicited implicit prejudices more strongly than the priming did. As hypothesized, monolinguals and multilinguals did not differ in the net amount of implicit prejudice expressed in the priming conditions but did differ in the IAT condition. This finding shows that monolinguals and multilinguals did not differ in the amount of implicit prejudice shown when prejudices are elicited fairly weakly (prejudice priming block) but did differ when the implicit prejudices are induced rather strongly (IAT task). This particular and precise difference between monolinguals and multilinguals supports the idea that multilingual people would not show less implicit prejudice because they possess less, but rather because they have the cognitive ability to ignore them (the action of this ability being neglectable under weak priming conditions, but perceptable—measurable—when the inducement to prejudice is done strongly). Multilinguals can ignore misleading cues not only when they are explicit (Bialystock, 1999; Bialystock & Hakuta, 1994; Bialystok & Shapero, 2005) but also when they are implicit.

The findings of this experiment are relevant as Nosek and Hansen (2008) demonstrated that simple associations could lead to implicit attitudes, which can eventually be generalized as explicit attitudes. Therefore, multilinguals could potentially show less explicit prejudice due to the simple reason that they may be less prone to making implicit misguided associations because of their capacity for ignoring implicit misleading cues.

Furthermore, prejudice is the mental state that may lead to discrimination. As a consequence, it may be pertinent to contest these prejudices, which are at the root of discriminatory behavior, instead of trying to combat discrimination directly. The contestation of prejudices is possible through mechanisms that prevent the passage from implicit mental states to explicit attitudes. The findings of this research suggest that knowing more than one language is one of these mechanisms.

The possible conclusions from this research have to be tentative because of several limitations. First, although it seems that the only difference between the subjects in the different groups was the number of languages mastered, it is always possible that there were more differences than that one. This possibility is particularly relevant in this experiment because it seems logical that people who have been exposed to different cultures would be more open-minded as a consequence of their experiences (see Dewaele & van Oudenhoven, 2009) and, therefore, express less prejudice. People who have been exposed to different cultures are also more likely to know more than one language. In short, the quasi-experimental nature of this study leaves the conclusions open to further interpretation.

Additionally, this study has shown that there is a difference in reaction times between groups in associating nouns to their respective categories. This finding argues for the idea that monolinguals and multilinguals could differ in their ability to ignore implicit misleading cues, not in their ability to repress their internal discriminatory urges. Certainly this study does not demonstrate that multilinguals would be less discriminatory than monolinguals.

Further research could control the level at which each individual has mastered the languages he or she knows. Replication of these findings with added conditions per variable (having those who speak one, two, or three languages in different groups) would be a fruitful follow-up. Similarly, instead of having only priming and IAT conditions, it would be interesting to have further conditions with further differentiations with respect to the intensity of prejudice inducement. A simple survey in order to determine if multilinguals actually report less prejudice than monolinguals would not be useful in this context as what is being argued is that multilinguals have a greater ability to ignore their implicit misleading associations that lead to prejudice, not that they actually are less prejudiced.

References
Bialystok, E. (1999) Cognitive complexity and attentional control in the

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One important and well-documented factor that can plague the harmony of the family unit is the presence of marital conflict. Marital conflict is characterized by the use of hurtful verbal and/or physical acts of aggression by one or both partners (Straus, 1979). In order for marital conflict to be defined as maladaptive, the conflict must be frequent, intense, and/or poorly resolved (Grych & Fincham, 1993). The frequency component of conflict refers to how often the child is exposed to conflict. Intensity can range from a rational discussion to engaging in physical violence. The final component, resolution, refers to whether the conflict was resolved between the parents. When marital conflict is frequent, involves verbal hostility and/or physical aggression, and is unresolved, it can be detrimental, whereas conflict that is less frequent, does not involve hostility and/or physical aggression, and is resolved can be seen as a healthy way to resolve differences. When marital conflict spills over into other areas of the couple’s life, such as parenting, it can damage a child’s sense of security and stability (Davies, Cummings, & Winter, 2004). Therefore, marital conflict can play a key role in how children develop emotionally and respond to the environment around them, and it can negatively affect their psychological well-being (Grych & Fincham, 1990).

The negative emotions that children may experience as a result of marital conflict can be expressed in the form of internalizing symptoms, such as anxiety (Schacht, Cummings, & Davies, 2009). Internalizing symptoms also can include self-blame, feelings of loneliness, depression, worry, diminished self-esteem, and a sense of helplessness (Ha, Overbeek, Vermulst, & Engels, 2009). These symptoms may appear because children fear that the conflict may lead to the break-up of their parents’ marriage and cause their relationship with their parents to deteriorate. The children then may internalize a sense of responsibility for the ongoing marital conflict between their parents (Grych, Fincham, Jouriles, & McDonald, 2000). Subsequently, children may feel like failures when they do not intervene or prevent the conflict, which then may lead to the development of more internalizing

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**ABSTRACT.** We tested whether the relation between marital conflict and child functioning may be mediated by two important factors: (a) decreases in parental support and (b) lack of authoritative parenting. The present sample consisted of 111 married couples and their adolescent children. We tested a multiple mediator model by using bootstrapping procedures in which support and authoritativeness were evaluated simultaneously as potential mediators. We found that the relation between marital conflict and child internalizing symptoms appears to be mediated by parental support, but not by authoritative parenting. Our findings revealed that parental support was a mediator only for fathers. We outline some empirical and clinical implications of these findings and offer suggestions for future research.
symptoms. Indeed, marital conflict accounts, to some degree, for psychological adjustment problems in children (Buehler & Gerard, 2002).

Researchers have shown that internalizing symptoms in children may result directly from the presence of marital conflict. Marital conflict, however, might also indirectly impact children’s internalizing difficulties. Family systems theory helps to elucidate these indirect pathways by highlighting the vital role that parents play in their children’s emotional development (Rinaldi & Howe, 2003). Specifically, the spillover hypothesis proposes that the quality of the marriage resonates throughout the family system to ultimately impact the children (Engfer, 1988). The spillover hypothesis proposes that if the quality of the parent’s marriage is poor, then the negative affect that characterizes that relationship might “spill” over into the parent-child relationship, which would then result in the parent-child relationship being characterized as negative, possibly impacting the children. Therefore, each subsystem (e.g., marital) might impact another subsystem (e.g., parent-child) through the transference of negative affect and behavior (i.e., spillover effects; Zimet & Jacob, 2001).

Supporting the assertions of family systems theory and the spillover hypothesis, researchers have indeed demonstrated that the relation between marital conflict and child maladjustment (e.g., internalizing symptoms) may be explained by indirect pathways (Fauber, Forehand, Thomas, & Wierson, 1990). Instead of marital conflict causing child internalizing symptoms only directly, the connection between the two variables may also be mediated by other factors. For instance, researchers have suggested that marital conflict may cause strain on the parent-child relationship because parents may divert their attention away from the children and decrease the time they spend with them, which can cause the quality of the parent-child relationship to decline (Erel & Burman, 1995). When the parent-child relationship deteriorates, children might believe that they are in some way responsible for the conflict between the parents; children might then internalize this belief of responsibility, which can produce negative emotions such as anxiety, depression, and loneliness.

In addition to time and attentiveness, two important factors to consider in the relation between marital conflict and child internalizing symptoms may include (a) deterioration in the parent-child relationship, specifically a lack of supportiveness within the relationship, and (b) less effective parenting or the failure of parents to use authoritative parenting methods. These two factors may mediate the link between marital conflict and child internalizing symptoms because the presence of marital conflict may cause parents to withdraw from or reject their children. The parents may not provide ample support for their children or become distant and cold toward their children, which may result in their children developing internalizing symptoms. Furthermore, the parents may become more concerned with their conflict and less concerned with their parenting responsibilities (Kaczynski, Lindahl, Malik, & Laurenceau, 2006); they may resort to using inconsistent or lax parenting methods (Fauber et al., 1990). Therefore, it is important to examine these two aspects of the parent-child relationship as potential mediators of the association between marital conflict and child internalizing symptoms.

**Parental Support**

The relationship between parent and child should be a primarily positive one in order to help prevent the child from developing internalizing symptoms in the face of marital conflict. Cummings and Davies (2010) characterized a positive parent-child relationship as one in which the parents provide ample warmth, support, and available time to interact with the child. Parental support involves the parent being an encouraging and secure base for the child. Therefore, the absence of parental support may play a mediating role between marital conflict and internalizing symptoms. Although support from both parents is imperative, paternal support may play a particularly salient role in the relation between marital conflict and child internalizing symptoms because of the differential parental roles of mothers and fathers. In most cases, mothers serve as the primary caregivers and spend a great deal of time with their children, whereas fathers are more likely, especially in the face of marital conflict, to distance themselves from parental responsibilities (Belsky, 1979; Crockenberg & Langrock, 2001). Therefore, declines in the presence of paternal support may serve as a mediator in the relation between marital conflict and child internalizing symptoms. Alternatively, maternal support might play a particularly important role in the relation between the two variables due to the more enduring role of the mother in the parent-child relationship. Because children might depend more on their mothers than their fathers for getting their basic needs met, declines in the
mother-child relationship might have a substantial impact. Both possibilities should be investigated.

**Parenting Style**

In addition to the possible mediating role of parental support, the parenting style used within the home is also likely to help explain the association between marital conflict and children’s internalizing symptoms. Parenting style is characterized as the general pattern of parenting methods each parent uses in order to discipline the children. These parenting methods are used over various situations, eventually creating a lasting emotional climate between the parent and children (Darling & Steinberg, 1993). The three most common parenting styles are: (a) authoritative, (b) authoritarian, and (c) permissive (Baumrind, 1971; Buri, 1991). Authoritative parenting is characterized by high levels of parental warmth, support, realistic demands for maturity, and an appropriate level of autonomy granting. Authoritarian parenting is characterized by low levels of support, involvement, and autonomy granting, but high levels of coercive/psychological control. The final parenting style, permissive parenting, is characterized by high levels of warmth and support as well as high levels of premature autonomy granting and overindulgence (Baumrind, 1971; Buri, 1991).

Davies et al. (2004), in their investigation of children’s responses to various family profiles, found that children whose parents engaged in high levels of conflict, low levels of support, or overindulgence (i.e., authoritarian or permissive parenting) exhibited higher levels of internalizing symptoms than children whose parents engaged in high levels of support, warmth, and reasonable autonomy granting (i.e., authoritative parenting). Taken one step further, scholars can consider these findings to imply that parental authoritativeness may play an integral role in explaining the association between marital conflict and child internalizing symptoms.

We investigated the link between marital conflict and child well-being, specifically the presence of child internalizing symptoms. In particular, we examined the indirect association between marital conflict and child internalizing symptoms and tested whether the association may be mediated by two parental behaviors: (a) decreases in supportiveness and (b) low levels of authoritativeness. We hypothesized that this mediational model of the association between marital conflict and child internalizing symptoms would show that decreases in parental supportiveness and authoritativeness are both mediators. The hypothesized mediational model appears in Figure 1.

**Method**

**Participants**

We drew our sample from a larger, longitudinal study of marital and family functioning. We recruited families to participate in the study if they were married and had a child within the target age range, 11 to 16 years old. If a family had more than one child in the target age range, the family was asked to select only one child to participate. Initially the sample consisted of 116 families, but five families failed to complete all questionnaires, thus making the final sample 111 families. Of the final sample, 11.70% were stepfamilies. On average, couples had 2.70 children (SD = 1.30) and had been married 16 years (SD = 5.80). Husbands were 43.50 years of age (SD = 6), and wives were 41.60 years of age (SD = 5.50). The racial composition for husbands was 1.10% Asian, 4.10% African American, 1.40% Native American, and 92.50% Caucasian. Of the wives, 3.20% were African American, 1.10% were Hispanic, and 95.70% were Caucasian. The most frequent income range reported by families was $50,000 to $75,000. The children averaged 13.30 years of age (SD = 1.70), and 51.40% of the sample were boys (n = 57).

**Measures**

Participants completed self-report measures in addition to a biographical data questionnaire. Children completed the Youth Self-Report (YSR; Achenbach & Edelbrock, 1983), Quality of Relationship Inventory (QRI; Pierce, Sarason, & Sarason, 1991), and Parental Authority Questionnaire (PAQ; Buri, 1991). Parents completed the Conflict Tactics Scale (CTS; Straus, 1979).

**Internalizing symptoms.** The YSR (Achenbach & Edelbrock, 1983) is a measure of emotional and behavioral functioning for children and adolescents ranging from ages 11 to 16. The participants answered each item on a Likert-type response scale: 0 (not true), 1 (somewhat/sometimes true), or 2 (very often true). Subscales that comprise the Internalizing Symptoms scale are Withdrawn (e.g., problematic interpersonal relationship or withdrawn personality), Somatic Complaints (e.g., vomiting), and Anxious/Depressed (e.g., thinking about killing self or mood changes suddenly). Adequate reliability and validity for this self-report has been established; the test-retest reliability coefficients range from .68 to .89, as evaluated by the measure’s creators (Achen-
The YSR shows acceptable internal consistency: Cronbach alphas have ranged from .59 to .86 for the Internalizing as well as the Externalizing subscales (Liu & Chao, 2005). We used the Internalizing subscale as a measure of children’s symptoms. We calculated T-scores using computerized scoring software supplied by the publisher. Higher T-scores on the Internalizing subscale indicate higher levels of internalizing symptoms, with T-scores of 50 being average and T-scores ≥ 70 generally considered to be clinically significant (Achenbach & Edelbrock, 1983).

**Parenting style.** The PAQ (Buri, 1991) is a measure of Baumrind’s (1971) three parenting styles. The PAQ consists of 30 items; participants responded on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). We rewored the items to accommodate the target age group, 11–16 years old. The questionnaire has established reliability and validity; test-retest reliabilities for each prototype over a two-week period ranged from .77 for father’s permissiveness to .92 for father’s authoritativeness (Buri, 1991). The measure shows acceptable internal consistency: Cronbach alpha values ranged from .74 for father’s permissiveness to .87 for father’s authoritarianism (Buri, 1991). We used a 15-item version of the PAQ in order to reduce respondent fatigue. The coefficient alphas for the 15-item version in the present sample ranged from .62 for mother’s permissiveness to .83 for father’s authoritarianism. The measure’s developer has established the validity of the PAQ, showing that authoritarianism is inversely related to both permissiveness and authoritativeness for both mothers and fathers and that the PAQ is related to measures of parental nurturance (Buri, 1991). Higher scores on each subscale indicate greater levels of that particular parenting style. Scores on the 5-item authoritative parenting subscale used in the present study can range from 5 to 25.

**Support.** The QRI (Pierce et al., 1991) is a 25-item measure that assesses the current quality of relationships and specifically evaluates the amount of support (7 items), conflict (12 items), and depth (6 items) in children’s relationships with their parents. Respondents rated each item on a 4-point Likert scale, ranging from 1 (not at all) to 4 (very much). The questionnaire’s authors have established reliability and validity of the QRI; test-retest reliabilities ranged from .80 to .90. The measure also has acceptable internal consistency: Cronbach alpha values ranged from .83 for mother’s supportiveness to .88 for father’s supportiveness (Pierce et al., 1991). The alpha coefficients obtained in the present study ranged from .80 for mother’s supportiveness to .86 for father’s supportiveness. Scores on the Support subscale can range from 7 to 28, with higher scores representing more perceived support.

**Marital conflict.** Scholars use the CTS (Straus, 1979) to assess the degree to which couples use certain strategies to resolve conflict. The type of strategies evaluated are reasoning (4 items), verbal aggression (4 items), and physical aggression (5 items). The CTS-N measures the frequency of behaviors performed by both self and partner over the past year. Respondents reported the fre-
Parental support as a mediator

T-scores between 37.07 and 58.63. The mean of the internalizing symptoms, as measured by the YSR, were in the average range; most children had means, standard deviations, and correlations in the present study. The scale developers’ coefficient alphas ranged from .70 to .88, and there is considerable evidence of its concurrent and content validity, as it is predictive of the incident rate of spousal violence (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The alphas in the present study ranged from .79 for father’s Reasoning to .94 for father’s Verbal Aggression. Per the scale’s developers (Straus et al., 1996), we converted responses on each item to a number representing the midpoint of that range (e.g., 5 was converted to 15; 6 was converted to 25) and then summed scores for each subscale. Higher scores indicate that parents reported using more of that type of conflict tactic (i.e., reasoning, verbal aggression, and physical aggression). We used the sum of the Verbal and Physical Aggression subscales for self and partner as an index of marital conflict in the present study; higher scores represent more reported conflict. For the 18 items assessing verbally and physically aggressive behaviors (9 items for each spouse), scores range from 0 to 450.

Procedure

Researchers recruited families randomly from a mailing list purchased from a direct mail company that collects information from major databases to create mailing lists for commercial use. Research assistants telephoned randomly selected families to assess their interest and eligibility (i.e., married with a child, 11 to 16 years old) for participating in the study. Researchers mailed the packets of surveys to the families’ homes, with each member’s respective survey (e.g., mother, father, and child) placed in separate envelopes. Researchers instructed the family members to refrain from sharing their answers and to be open and honest in their responses. The respondents sealed their surveys in separate envelopes and then either mailed them back to the research lab or requested that they be picked up by a research assistant at the family’s home. Families received a $20 gift certificate as compensation for their participation in the study.

Results

Means, standard deviations, and correlations appear in Table 1. As shown in the table, children’s internalizing symptoms, as measured by the YSR, were in the average range; most children had T-scores between 37.07 and 58.63. The mean of the PAQ Authoritative subscale was in the moderate to high range. Item means further illustrate that children reported the highest levels of authoritative parenting, with the permissive parenting style receiving the lowest ratings. The item means on the PAQ Permissive subscale were 2.81 (SD = .70) for mothers and 2.68 (SD = .73) for fathers. Children’s item means for the Authoritarian subscale were 3.26 (SD = .72) for mothers and 3.35 (SD = .71) for fathers. Lastly, the item means for the Authoritative subscale were 3.79 (SD = .81) for mothers and 3.54 (SD = .91) for fathers. Regarding the QRI, the means of the Support subscale, as shown in Table 1, revealed high levels of perceived support. According to the item means, children also reported high levels of depth in the parent-child relationship, and they described conflict in the parent-child relationship as fairly low. The item means for the QRI Support subscale were 3.08 (SD = .52) for mothers and 2.84 (SD = .62) for fathers. The item means for the Conflict subscale were 2.03 (SD = .47) for mothers and 2.16 (SD = .54) for fathers. The item means for the Depth subscale were 3.37 (SD = .52) for mothers and 3.12 (SD = .59) for fathers.

Parents reported that they used reasoning strategies to deal with marital conflict more frequently than physically or verbally aggressive tactics. Marital conflict in this sample was infrequent, although reports varied widely, as illustrated by the CTS mean and standard deviation in Table 1. Fathers’ mean on the CTS was 37.91 (SD = 57.60), and mothers’ was 31.17 (SD = 37.86). Overall, parents reported that physical and verbal aggression occurred relatively infrequently, about twice in the past year, with physical aggression occurring less frequently than verbal aggression. The overall item means on the CTS-N Reasoning subscale were 2.56 (SD = 1.30) for mothers and 2.60 (SD = 1.25) for fathers. The item means on the Verbal Aggression subscale were 1.97 (SD = 1.25) for mothers and 1.96 (SD = 1.39) for fathers. Finally, the item means for the Physical Aggression subscale were 1.97 (SD = 1.25) for mothers and 2.22 (SD = .73) for fathers.

As shown in Table 1, the correlations between parent reports of marital conflict and children’s reports of father/mother supportiveness, father/mother authoritativeness, and their own internalizing symptoms were in the expected directions. To obtain a more accurate index of conflict for further analysis, we created an aggregate score of marital conflict by averaging mothers’ and fathers’ CTS scores. We believed this approach to be acceptable.
because the scores were highly correlated, \( r(101) = .79, p < .001 \), and because using a combined measure is likely to help reduce the respondent bias inherent in self-report measures of conflict.

In order to test whether reports of lack of parental supportiveness and low levels of authoritativeness by parents mediated the association between marital conflict and child internalizing symptoms, we tested a multiple mediator model by using bootstrapping procedures, in which two mediators (i.e., lack of supportiveness and low levels of authoritativeness) were examined simultaneously (Preacher & Hayes, 2008). Mediation is demonstrated when several conditions are met (Baron & Kenny, 1986): (a) the predictor variable predicts the outcome variable; (b) the predictor variable predicts the hypothesized mediating variables; (c) the mediating variable predicts the dependent variable when included in a model with the predictor variable; (d) the relationship between the predictor variable and the dependent variable becomes nonsignificant when the mediating variables are included in the model. Because CTS scores did not correlate with children’s QRI-Support or PAQ-Authoritative ratings for the mother, we did not test whether the mothers’ parenting variables mediate the association between marital conflict and internalizing symptoms.

Bootstrapping tests for mediation by repeatedly extracting samples from the data set (e.g., 1000 cases) and estimating the indirect effects in each resampled data set (Williams & MacKinnon, 2008). All intervals described here are bias corrected and accelerated (BCa), and we used a 95% confidence interval with 1000 samples. To test whether fathers’ parenting variables mediate the association between marital conflict and internalizing symptoms, we entered YSR-Internalizing T-scores as the dependent variable, mothers’ and fathers’ aggregated CTS scores as the predictor variable, and either fathers’ PAQ-Authoritative scores and QRI-Support scores as potential mediators using the SPSS macro created by Preacher and Hayes for bootstrap analyses with multiple proposed mediators; the macro is available at www.quantpsy.org (Preacher & Hayes, 2008).

From the bootstrap analysis results, we found that marital conflict predicted higher levels of child internalizing symptoms (total effect = .05, \( p = .04 \)), but this effect was no longer statistically significant when we included the two proposed mediators in the model (direct effect of marital conflict = .03, \( p < .23 \)). Furthermore, we found that the total indirect effect of marital conflict on the outcome variable through the two mediators was significant, with a point estimate of .02 and a 95% BCa bootstrap confidence interval of .0009 to .0500. Thus, the two parent-child relationship variables together appeared to mediate the association between marital conflict and child internalizing symptoms. The specific indirect effects of each proposed mediator showed that lack of paternal supportiveness, with a point estimate of .0246 and 95% BCa CI of .0054 to .0573, was a significant unique mediator, whereas fathers’ lack of authoritativeness was not (point estimate = -.0049, BCa CI = -.0239 to .0050). In sum, the bootstrap analyses indicated that, for fathers, lack of parental supportiveness mediated the association between marital conflict and child internalizing symptoms above and beyond low levels of authoritativeness.

Discussion

We hypothesized that the association between marital conflict and child internalizing symptoms would fit a mediational model such that low levels of parental supportiveness and authoritativeness would both act as mediators of the association. We found that the parent-child relationship variables

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**TABLE 1**

| Bivariate Correlations and Descriptive Statistics (\( N = 111 \) families) |
|---|---|---|---|---|---|---|
|       | CTS | F-QRI Support | M-QRI Support | F-PAQ Authoritative | M-PAQ Authoritative | YSR-INT |
| F-QRI Support | -26** | - | | | | |
| M-QRI Support | | -08 | .42** | - | | |
| F-PAQ Authoritative | | | -25* | .61** | .32** | - |
| M-PAQ Authoritative | | | | -15 | .27** | .61** | .56** | - |
| YSR-INT | | | | | | .20 | -.39 | .02 | -25** | -.05 | - |

Note. F = Fathers. M = Mothers. CTS = The average of mothers’ and fathers’ summed scores on the Verbal Aggression and Physical Aggression subscales of the Conflict Tactics Scale. QRI Support = Parent-Child Support subscale of the Quality of Relationship Inventory. PAQ Authoritative = Parental Authoritativeness subscale of the Parental Authority Questionnaire. YSR-INT = Youth Self-Report, Internalizing scale (T-scores). *p < .05. **p < .01.
Parental support as a mediator

found that when fathers experienced marital conflict and child internalizing symptoms was lack of parental supportiveness, and that decreases in authoritativeness were not a mediator.

When marital conflict is more frequent, parental responsibilities may become secondary to the conflict at hand, meaning that the parents’ focus may be primarily on the conflict rather than on providing support and/or attention to their children. This lack of attentiveness and/or shift from supportive behaviors by the parents may cause the children to believe that the inattentiveness and lack of support may have been in reaction to their behavior. As a result, children may internalize this belief of responsibility for their parent’s conflict and subsequent lack of support. Notably, the present study consisted of married couples who generally reported very low levels of conflict; therefore, the patterns revealed in the present study may not be generalizable to families experiencing more frequent or intense levels of violence. Because children’s reactions to marital conflict can vary according to its severity, the relations among marital conflict, parental support, authoritative parenting, and internalizing symptoms are likely to be different for families experiencing mild conflict versus those who deal with frequent, hostile, and/or unresolved violence (e.g., Grych, Seid, & Fincham, 1992; Kerig, 1996). Regardless, the present findings reveal that even low levels of marital conflict can “spill” over into the parent-child relationship and negatively impact the child.

We may have found the hypothesized pattern only for fathers because, traditionally, fathers do not take on the primary caregiver responsibilities, which may make it easier for them to disengage from the family, thus detaching themselves from their parental responsibilities in the wake of marital conflict (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000). Harris, Furstenberg, and Marmer (1998) investigated father involvement and found that fathers tend to disengage from the father-child relationship in the presence of marital conflict (i.e., withdrawing support and involvement). Similarly, Brody, Pellegrini, and Sigel (1986) found that when fathers experienced marital conflict they were more intrusive and gave less positive feedback to their children, which further suggests that the father-child relationship might be more vulnerable to marital conflict than the mother-child relationship. Amato (1986) also concluded that the father-child relationship might be more vulnerable to the adverse effects of marital conflict, specifically showing that fathers are more at risk for withdrawing from the father-child relationship. Further, the father-child relationship might be more fragile than the mother-child relationship, meaning that children may be more affected by the father’s lack of support because support from the mother may be somewhat expected, or taken for granted, in their eyes. Children’s perceptions of the mother-child relationship as mandatory might be linked to mothers traditionally spending more time with them, thus allowing for more interaction (i.e., support), whereas fathers might not spend the same amount of time with them, therefore possibly making their support harder to obtain in the eyes of the child (Coiro & Emery, 1998).

Jain, Belsky, and Crnic (1996) found that fathers who ranked higher in education level and job status, and lower on the neurotic/negative affect spectrum, were more engaged and supportive in their parental roles than their counterparts. Jain and colleagues thus offered some characteristics of a supportive and involved father, thereby suggesting that other factors, such as education level, might also impact the father-child relationship. Further, Jouriles and Farris (1992) found that both mothers and fathers experienced equal distress during marital conflict, but the conflict negatively affected only fathers’ parenting versus mothers’ parenting. Therefore, our findings appear to be consistent with previous research indicating that marital conflict possibly affects the father-child relationship to a greater degree than the mother-child relationship. According to the spillover hypothesis, the father’s role in the family is impacted by the relationship with his spouse, which in turn affects his relationship with his children. Specifically, the father’s experience of marital conflict might diminish his relationship with his children (e.g., withdrawal of his support), which might then negatively affect the children (e.g., child internalizing symptoms). We expanded on previous research by examining two indirect pathways (i.e., lack of parental support and authoritativeness) simultaneously and by demonstrating that decrements in paternal support help to explain
the spillover effect between marital conflict and child well-being. Thus, the present findings are consistent with family systems theory and provide an additional illustration of the theory as it pertains to marital conflict.

Lack of authoritative parenting was not a significant mediator in the present study. Although fathers’ authoritative parenting (PAQ-Authoritativeness scores) was negatively correlated with both marital conflict (CTS scores) and child internalizing symptoms (YSR-Internalizing scores), it did not account for sufficient additional variance in child symptoms when considered simultaneously with parental support. Support is a major characteristic of authoritative parenting (Wolfkott, Hempel, & Miles, 2003); it is possible that such multicollinearity diminished the ability of authoritativeness to account for variance in the model. Alternatively, it is possible that support is more important than parenting style in the eyes of the child, and thus would primarily account for the spillover effect. Researchers will need to further examine these possibilities in future studies, and they also will want to consider using purer, more independent measures of these constructs in future research.

**Limitations and Future Directions**

There were some additional limitations to this study that the reader should take into account when interpreting the findings. First, the majority of the participants identified themselves as Caucasian and middle class. The homogeneity of the sample makes it difficult to generalize the present findings to other socioeconomic and racial/ethnic groups. Second, the study’s measures were all self-report, which makes the data vulnerable to respondent biases and problems inherent in monomethod data collection. In addition, the cross-sectional design of the present study was not a true test of mediation. To truly test mediation, a longitudinal study would be more appropriate; the present study yielded a statistically significant mediational model that should be further tested with a longitudinal design. Finally, the sample was relatively low in marital conflict and children were fairly high functioning, judging from the YSR T-scores; future studies should examine samples with higher levels of conflict as well as children with a greater severity of internalizing symptoms.

One strength of the present study is that it included data from multiple respondents (i.e., child, mother, and father), thus adding rigor and helping to avoid difficulties with using only one reporter. In the future, it would be interesting to assess these constructs in real life parent-child interactions as well as vis-à-vis husband-wife interactions in order to observe how these constructs are expressed behaviorally. In the future, single-parent families should be studied to test whether there is consistency between single and dual-parent family types with regard to the role of parental support in predicting the child’s internalizing behavior. In addition, future studies should explore whether other factors, such as the child’s cognitions, gender, and temperament, may serve as additional mediators, or even as moderators, in the relation between marital conflict and child internalizing symptoms.

Moreover, researchers should explore in future studies the roles that race and socioeconomic status play in the links among these variables. The race or socioeconomic group to which an individual belongs may influence how they may parent their children, which in turn may play a role in whether children express internalizing symptoms. Hofferth (2003) found that African-American parents exhibit less control and parental warmth and that Latino parents emphasize parental warmth and the sharing of parental responsibilities with extended family. These findings suggest that parenting practices may stem from socialization processes (i.e., parenting style utilized by one’s parents), which can vary across race and ethnicities and influence the parenting style used with one’s children. Also, in future studies scholars should explore the sex of the child as a factor in the relationship between marital conflict and child internalizing symptoms. The sex of the child may play an as yet unseen role in how the child deals with marital conflict between his or her parents (i.e., expressing internalizing symptoms versus externalizing, or no symptoms at all). For example, Feshbach (1970) reported that boys tend to respond to a stressor (i.e., marital conflict) with aggressive behavior (i.e., externalizing symptoms), whereas girls are more likely to inhibit their behavior (i.e., internalizing symptoms). This finding suggests that girls are more prone to exhibit internalizing symptoms than boys, who are more likely to exhibit externalizing symptoms.

**Clinical Implications**

The quality of the parent-child relationship is a crucial component in determining child functioning. We found that lack of supportiveness in the parent-child relationship, specifically with fathers, may be a key element in the development of child internalizing symptoms. Family and marriage
counselors should take note of this finding and address the development and maintenance of the father-child relationship, focusing on making sure that both parents provide the child with ample support in order for the child to feel a sense of emotional security and stability. Therapists also should view maladaptive marital conflict as a problem that affects all aspects of the couple’s life, including parenting. Thus, couples therapists should be aware of the broader consequences of marital conflict that resonate throughout the family system, not just within the marriage, in order to help families heal. The effects of marital conflict on the parents should be examined in addition to its impact on parent-child relationships, particularly father-child relationships and child well-being.

In summary, we examined the indirect association between marital conflict and child internalizing symptoms, specifically how two aspects of parental behavior—lack of parental support and low levels of authoritativeness—mediate the association. Results indicated that lack of supportiveness is a significant mediator of the relationship between marital conflict and child internalizing symptoms, whereas low levels of authoritativeness were not. We found this mediational model to be significant only for fathers. Therefore, future researchers and clinicians should place more emphasis on better understanding how parental support, specifically paternal support, might be impacted by marital conflict and subsequently affect child well-being.

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Prenatal Motherese? Newborn Speech Perception May Be Enhanced by Having a Young Sibling
Tian Zhao, Christine Moon*, Hugo Lagercrantz, and Patricia Kuhl
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ABSTRACT. Prenatal experience with infant- and child-directed speech (IDS/CDS) may affect newborns’ speech perception. We examined this possibility using an existing neonatal database from a recent cross-language study (Moon, Lagercrantz, & Kuhl, 2011). Seventy-three American and Swedish neonates ($M_{age} = 32.58$ hr, $SD = 13.58$ hr) were retrospectively coded as either having High ($n = 32$) or Low ($n = 41$) prenatal IDS/CDS exposure based on whether there were any children younger than 4 years old in the household during pregnancy. We compared the mean sucks for contingent presentations of prototypes and nonprototypes of vowel stimuli (native or foreign) among groups. A mixed 3-way ANOVA revealed a significant interaction: Neonates responded to prototypes and nonprototypes differently in the High IDS/CDS group, whereas there was a lack of differential responses in the Low IDS/CDS group. Future research with well-controlled measurement of prenatal speech is warranted.

When talking to infants and young children, people in virtually every language environment naturally adopt a form of speech that researchers believe is a match with youngsters’ developing capacities for speech and language (Ferguson, 1964; Snow, Ferguson, & Social Science Research Council, 1977). Infant-directed speech (IDS) and child-directed speech (CDS) consist of utterances that are shorter, more repetitious, and higher and more varied in pitch in comparison to adult-directed speech (ADS; Fernald & Simon, 1984; Snow, 1977). IDS and CDS are also characterized by vowels that are longer in duration and more “stretched” in acoustic space (Englund & Behne, 2005; Kuhl et al., 1997; Liu, Tsao, & Kuhl, 2009).

There is some experimental evidence showing the functional purpose of IDS/CDS in helping infants to learn their languages. In a vowel discrimination task, 6–7 month-old infants performed significantly better when speech sounds were synthesized to approximate the pitch contour of IDS (Trainor & Desjardins, 2002). Thiessen, Hill, and Saffran (2005) have also demonstrated that IDS helped 6-month-olds to segment words from syllable streams. In another type of test, the clarity of mothers’ speech, defined by the level of stretched vowel space, was positively correlated with infants’ (6–8 months and 10–12 months old) performance in a consonant discrimination task (Liu, Kuhl, & Tsao, 2003). The results from these experiments suggest that adults’ efforts to modify speech for infants and young children serve the purpose of helping the youngsters identify and process important segments in the speech stream in the initial period of development.

Although research has demonstrated the benefits of clearer and more exaggerated speech for infants as early as 6 months of age (e.g., Liu et al., 2003), human hearing begins much earlier than birth. Fetal ear structures are developed by the 20th week of gestation, and some fetuses have
responded to sound beginning around the 19th week of gestation (Hepper & Shahidullah, 1994). Therefore, fetuses may experience as much as 20 weeks of hearing prior to birth. When presented with synthesized speech sounds, human fetuses (24–36 weeks) exhibited a decrease in fetal heart rate and an increase in heart rate variability, which are indications of fetal attentional responses to auditory stimuli (Zimmer et al., 1993). It is therefore plausible that neonates may already have some experience with the phonetic units of a language at the time of birth. Indeed, results from a recent cross-language experiment showed that neonates produced a higher sucking response rate for the prototype of a foreign, but not a native vowel (Moon, Lagercrantz, & Kuhl, 2011). A prototype is a category member that is the best example of the category and has been shown to be privileged in both perception and memory (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976); in the context of the study mentioned previously (Moon et al., 2011), the prototype is the vowel exemplar that best represents the category (Kuhl, Williams, Lacerda, Stevens, & Lindblom, 1992). Moon and colleagues (2011) adopted an operant-choice procedure (Aldridge, Stillman, & Bower, 2001) to investigate how neonates from the U.S and Sweden responded to variations of an English vowel /i/ (as in “fee”) and a Swedish vowel /y/ (as in “fy”). Neonates younger than 72 hr heard 17 variations of either the English or the Swedish vowel. Researchers compared the mean sucks for the prototype and nonprototypes for each vowel between groups. Within hours after birth, neonates already sucked significantly more for the prototype and nonprototypes for each vowel than the native prototype, whereas this pattern would be weaker in Low IDS/CDS neonates.

We assumed that, in this case, IDS and CDS would comprise a larger portion of the pregnant mothers’ daily speech with consequent transmission to the intrauterine acoustic environment. Therefore, we identified some of the neonates as likely to have been exposed to a larger amount of IDS/CDS (High IDS/CDS) and others as unlikely to have experienced the acoustically distinct vowels in IDS/ CDS (Low IDS/CDS). We hypothesized that the main finding of the cross-language study (Moon et al., 2011) would be enhanced in the neonates with High IDS/CDS. That is, they would produce more sucks during the foreign prototype presentation in comparison to foreign nonprototypes as well as to the native prototype, whereas this pattern would be weaker in Low IDS/CDS neonates.

**Method**

**Participants**

All subjects’ information came from the database of the previous research that investigated newborns’ perception of native and foreign vowels (Moon et al., 2011). The original database consisted of information from 80 neonates recruited and tested in hospitals in Tacoma, Washington and Stockholm, Sweden. The inclusion criteria of the original study were apparently healthy newborns without pregnancy or birth complications, less than 72 hr of age. For 20 infants in each country, the stimuli were in the native language and for the other 20, stimuli were in the foreign language.

We evaluated the probability of exposure to IDS/CDS during pregnancy of all the neonates in the database. The age of the mother and her parity (number of pregnancies and live births) were the main factors taken into consideration for coding the likelihood of mothers’ use of IDS/CDS. Therefore, we excluded 7 neonates from further analysis due to missing information on parity. The number of participants for the post hoc analysis was 73, including 39 American neonates and 34 Swedish neonates (Mage = 32.58 hr, SD = 13.58 hr). The two IDS/CDS exposure groups did not differ statistically in average age in hours since birth (Mlow IDS/CDS = 33.66, Mhigh IDS/CDS = 31.19), gestational age in weeks since conception (Mlow = 39.75, Mhigh = 39.41), birth weight (Mlow = 3472.07, Mhigh = 3458.53), total number of sucks (Mlow = 113.63, Mhigh = 122.59), and male neonate percentage (Mlow = 26.83%, Mhigh = 37.5%) all t s < 1.1, all ps > 0.2.

**Stimuli**

We adopted all auditory stimuli from a study inves-
Effect of IDS/CDS on Newborns’ Speech Perception | Zhao, Moon, Lagercrantz, and Kuhl

Investigating the influence of linguistic experience on 6-month-old infants’ phonetic perception (Kuhl et al., 1992). The prototypes of the American /i/ and Swedish /y/ were first computer generated based on native adult speakers’ evaluation of the best examples of those vowels. Researchers subsequently created 16 variations of each prototype by manipulating the first two formant frequencies of the vowels, forming two concentric rings in F1/F2 vowel space circling the prototype. All 16 variations of one vowel were the nonprototypes.

Equipment

The stimuli were delivered by a Dell computer to the newborns through Grado 225 headphones placed close to both ears. The loudness of the sound stimuli averaged 72 dB (Bruel & Kjaer Sound Level Meter Model 2235, Scale A). A pacifier with an air pressure sensor was offered to the newborn and, if the infant sucked with sufficient intensity and rhythmicity, stimulus presentation began. The pressure sensor provided input to a computer with custom software that delivered speech stimuli when the sucking pressure reached a threshold, adjusted for each infant so nearly every suck produced sound in the headphones.

Design and Procedures

The original study used a mixed design (Moon et al., 2011). For the independent variable of language type, half of the infants in each country heard the prototype and 16 variants of their native vowel and the other half heard the foreign prototype and its 16 variants. For the independent variable of vowel type (prototype vs. nonprototype), each newborn heard all 17 versions of a given vowel prototype plus variants. Upon initiation of sucking, one of the 17 stimuli was activated in the headphones and repeated until there was a pause in sucking of at least 1s. When sucking resumed, a new stimulus was presented. All the sessions were 300s long, and all the neonates were able to cycle through all 17 vowel variants at least once in a randomized order. The dependent measure was the number of sucks for each vowel stimulus in the first presentation cycle, reflecting the level of arousal in the neonates by each speech stimulus without any previous exposure to the stimuli.

For the present study, we retrospectively coded 32 neonates as having high probability (High IDS/CDS) and 41 as having low probability of prenatal exposure to IDS/CDS (Low IDS/CDS). We assumed that first-born infants and infants with siblings older than 5 years of age were unlikely to have experienced IDS/CDS prenatally whereas the infants with siblings within 4 years of age during pregnancy were likely to have had high level of prenatal IDS/CDS exposure.

Results

The number of sucks to all 16 nonprototypes was averaged for each newborn for comparison to the sucks to the prototype. The mean sucks for prototypes and nonprototypes were then calculated among newborns. The independent variables in this analysis were Prenatal Exposure to IDS/CDS (High vs. Low), Language Type (Native vs. Foreign), and the Vowel Status (Prototype vs. Nonprototype). Figure 1 displays the results for High and Low IDS/CDS groups, respectively. A mixed three-way 2 x 2 x 2 ANOVA was conducted to examine whether prenatal exposure to IDS/CDS impacted neonatal perception of native and foreign vowels at birth. Results revealed a significant interaction among the three variables, F(1, 69) = 7.34, p = .009, η² = 0.096 (Figure 1). Further analysis showed that the High IDS/CDS group sucked significantly more for the foreign prototype than to the foreign nonprototypes, F(1, 14) = 5.63, p = .032, η² = 0.287; and less for the native prototype compared to the native nonprototypes, F(1, 16) = 5.25, p = .036, η² = 0.247. In the low IDS/CDS exposure group, this pattern was not present. There were no differences in sucking to prototype versus nonprototypes in either the native or the foreign language.

A supplementary two-way ANOVA was conducted to examine the effect of prenatal IDS/CDS exposure on neonates’ perception of the prototype of native or foreign vowels. This analysis showed a significant interaction, F(1, 69) = 5.57, p = .021, η² = 0.075 (see Figure 2): Neonates in the foreign language group sucked significantly more to activate the prototype compared to infants in the native language group but only when they had high level of prenatal exposure of IDS/CDS.

Discussion

Our study demonstrated that newborns 33 hr after birth exhibited differential response patterns to native versus foreign vowel variants depending on their level of prenatal exposure to infant-directed and child-directed speech (IDS/CDS). Newborns with a high probability of prenatal IDS/CDS exposure responded differently to prototypes versus nonprototypes: Sucks to the prototype were more frequent when the stimuli were foreign and
less frequent when the stimuli were native vowel variants. On the other hand, newborns with little prenatal IDS/CDS exposure exhibited no response differences to the vowel prototypes versus variants in either language.

We offer speculations regarding the results of both High and Low IDS/CDS groups. For the High IDS/CDS group, first, prenatal experience with distinct vowels emphasized by IDS/CDS directs newborn attention to some, as yet unidentified, characteristics of vowels that are prototypes. Future research is needed to identify characteristics that set prototypes apart from nonprototypes for newborn infants. Second, a novel foreign prototype may elicit a higher level of arousal whereas a native prototype may result in a momentary orienting response in which the infant is preparing to take in more information and consequently stops sucking (Sokolov, 1963, Stekelenburg & van Boxtel, 2002). For the Low IDS/CDS group, the lack of differential response to the foreign vowel prototype suggests infants’ inability to discriminate. However, it is also possible that these infants, with relatively little experience with different vowels may be able to discriminate, but unable to make a selective response.

Although the differences between experienced and inexperienced newborns were statistically significant, the analysis was exploratory in nature for generating further hypotheses; no causal relations should be inferred. An important direction for future research is using a more systematic and accurate way to measure IDS/CDS exposure. One way to approach this issue would be to develop a maternal questionnaire that directly asks about the prenatal sound environment, especially the mother’s daily conversation partners. Another, more reliable but labor-intensive approach would be to employ a device that can record the daily sound environment of neonatal research participants before birth for more strict control of IDS/CDS exposure.

In summary, our results are consistent with the notions that different styles of maternal speech
may affect vowel perception in newborns (Liu et al., 2003) and that the prenatal period may also be very influential. By carefully measuring the prenatal sound environment, researchers may be able to learn more about typical learning process of speech sound and how it is influenced by the environment. Eventually, we may be able to better understand and support the very early basic processes involved in language acquisition and also devise early intervention strategies for atypical development at the point when the brain has optimal plasticity.

References

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Tian (Christina) Zhao graduated from Pacific Lutheran University in Tacoma, Washington with a bachelor’s degree in psychology, with minors in biology and music. There, she was first involved in research through working with Dr. Christine Moon, studying how infants perceive speech. Upon graduating from college, she started her PhD program at the Department of Speech and Hearing Sciences at University of Washington. The research questions that interest her most are concerning the interaction between music and speech perception and how experience in a particular sound environment shapes one’s perception of sounds. Particularly, she is interested in the neural mechanism that underlies auditory perception in the aforementioned domains.
Understanding the complexities inherent in descriptions of research journals can take significant time and energy, and in the end leave the average psychologist and psychology student wondering—what does it all mean? Why does this matter? In this column, I attempt to provide information to illuminate how journals are described and why we care. Additionally, I will review how our own journal, *Psi Chi Journal of Undergraduate Research*, measures up on these criteria. In short, *Psi Chi Journal of Undergraduate Research* is a scholarly journal that is peer-reviewed and indexed. Let’s explore these areas so you will feel very excited about this description!

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A scholarly journal in psychology has as its primary content reports of original research or in-depth analysis of topics in our field. It is also intended for an academic audience. The articles tend to be long, and in order to be published, they are judged by a jury of peers (i.e., peer-reviewers). These articles are discernible in that the authors are themselves scholars, often with academic affiliations and include substantive documentation to support all arguments advanced (Eland, 2002). Typically articles of general public interest are published in newspapers, magazines, newsletters, or other outlets. Articles published in scholarly journals are intended to contribute to, and further, psychological science. Articles considered for publication in the *Psi Chi Journal* have to be original work and based on empirical observations. The undergraduate authors who submit their work to *Psi Chi Journal* are scholars looking to contribute to furthering psychological science. Unlike research published in the majority of psychology journals, however, the reviewers judge submissions to our journal in terms of whether the projects are “well researched and conceived for someone with an undergraduate level of competence and experience (Psi Chi National Council, 1996).”

**Our Journal is Peer-Reviewed**

When a scholarly journal is peer-reviewed, the articles are submitted to an editor or associate editor who then assigns the article to multiple reviewers (typically two or three). Each reviewer independently reads and evaluates the article for its scientific soundness, including the rationale for carrying out the study and the appropriateness of the methods used to answer the questions of interest. Reviewers also check that statistical analyses are adequate and carried out without error, and that conclusions are based on evidence and not overgeneralized. These reviewers also check for, and provide feedback on, grammar and APA publication style. Peer reviewers are typically psychology faculty who have expertise in the specific area of research of the manuscript. Peer-reviewed journals may also be called “refereed,” and *Psi Chi’s Journal* has been refereed in this manner since it was founded in 1995.

Articles may take months to move from submission to publication because the peer-review process takes time. Reviewers have 4 to 6 weeks to read and evaluate the manuscript. The journal editor then reviews all of the feedback and makes a decision about whether the article will (a) be accepted as it was submitted, (b) need revisions prior to being considered for publication, or (c) be rejected. This editorial review process can take another 2 to 3 weeks, especially when reviewers’ feedback is highly incongruent.

The peer-review standard places the *Psi Chi Journal* clearly in the arena of scholarly publications and signals a standard of rigorous scholarship that is highly desirable in academic publications. When an article is peer-reviewed, the reader can more confidently assume that the arguments on which a study rests are based on psychological evidence and that the findings and conclusions can confidently inform scientific developments. Any one reviewer can have a “bad day” or a “blind spot,” but the combined assessment of three scholars with subject-area expertise ensures a more rigorous examination of the research.
expertise along with that of the journal editor is less likely to fall prey to these limitations.

Thus far we have addressed the nature of the content of our Journal (scholarly) and that content’s quality (peer-reviewed). However, we must attend to dissemination factors to ensure that we meet the first subend of Psi Chi’s mission, which is “Advance the science and profession of psychology” (Psi Chi, 2011). How can we possibly advance the science of psychology if very few people are reading our Journal content? Journal indexing addresses dissemination.

Our Journal is Indexed

Indexing signals the Journal’s inclusion in a professionally recognized database. Databases such as EBSCOHost and PsycINFO provide a central location in which scholars can search across multiple relevant journals for desired scholarly information. Journals that are not indexed rely purely on subscribers to read their contents and disseminate the information therein at the individual level. Indexes allow broader dissemination of the Journal content to interested audiences.

According to the American Psychological Association (2010) publication manual:

The scientific journal is the repository of the accumulated knowledge of a field. The findings and analyses, the successes and failure, and the perspectives of many investigators over many years are recorded in the literature. Familiarity with the literature allows an individual investigator to avoid needlessly repeating work that has been done before, build on existing work, and in turn contribute something new (p. 9).

Competent dissemination of psychological science adds information for prospective and current researchers to better understand the state of the science in a particular area of inquiry. It is imperative that findings be dispersed effectively. Indeed, it is Psi Chi’s ethical and professional responsibility to psychological science and to its authors to attempt to disseminate the findings contained in the Journal as broadly as possible. The Journal is currently indexed in one such database, EBSCOHost (Academic Search Complete). Scholars that have access to libraries that subscribe to Academic Search Complete can have access to Journal citations and PDFs of specific articles. We are not fully satisfied that we meet this criterion. The more indexes the Journal appears in, the broader the reach of the scholarship contained in its pages. This is one area where the Journal’s publication team is hard at work to pursue indexing that is broader within the US (e.g., PsycINFO) as well as overseas. The more indexes in which our Journal appears, the more broadly we will be disseminating Journal articles.

As of today, we can proudly say that our Psi Chi Journal of Undergraduate Research is scholarly, peer-reviewed, and indexed. The Journal will continue to maintain its rigorous scholarly standards. In keeping with the spirit of our mission “to encourage, stimulate, and maintain excellence in scholarship … and to advance the science of psychology” (Psi Chi, 2011) we will also assertively pursue indexing in databases beyond EBSCOHost to ensure that we are extending our reach as widely as possible in the service of our members and our academic discipline.

References


Author Note: Dr. Melanie M. Domenech Rodríguez (Utah State University) is Interim Editor of the Psi Chi Journal of Undergraduate Research and is working closely with outgoing Editor, Dr. Randolph A. Smith.

Melanie M. Domenech Rodríguez, PhD, is an associate professor of psychology at Utah State University and a licensed psychologist in Utah and Puerto Rico. She obtained her doctoral degree at Colorado State University in 1999. She is Psi Chi faculty coadvisor for the Utah State University chapter and is a former Psi Chi Rocky Mountain Regional Vice-President. Her research and academic interests are in preventive intervention trials, Latino mental health, cultural competence development, and ethics. Dr. Domenech Rodríguez is actively engaged in programs of research in Mexico, Puerto Rico, and Michigan. In Mexico, Dr. Domenech Rodríguez is engaged in a preventive intervention trial of a Parent Management Training–Oregon (PMTO) intervention in Mexico City. In Puerto Rico, she is examining normative parenting practices in Puerto Rican families in preparation for a proposal for an intervention trial.


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