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for Speech-Language and Hearing*



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About the Editor

Kenyatta O. Rivers, Ph.D., CCC-SLP, *JNBASLH*'s Editor, is an Associate Professor in the Department of Communication Sciences and Disorders at the University of Central Florida in Orlando, Florida. Dr. Rivers teaching, research, and clinical interests include language/literacy disorders in children and adolescents, pragmatic language differences and disorders in African American children and adolescents, cognitive-communication disorders in children, adolescents, and adults, and evidence-based practice in schools. He is an ASHA Fellow, a recipient of ASHA's Certificate of Recognition for Special Contributions in Multicultural Affairs, and a Board Member of the National Black Association for Speech-Language and Hearing. He is an editorial reviewer for a number of journals, including *Language, Speech, and Hearing Services in Schools*, the *American Journal of Speech-Language Pathology*, the *Journal of Speech-Language-Hearing Research*, and *Aphasiology*, and an Associate Special Issue Editor for *Topics in Language Disorders*. In addition, Dr. Rivers is a Member of the Communication Sciences and Disorders Clinical Trials Research Group and the ASHA SIG 14 (Communication Disorders and Sciences in Culturally and Linguistically Diverse Populations). E-mail address: kenyatta.rivers@ucf.edu.

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About the Journal

The *Journal of the National Black Association for Speech-Language and Hearing (JNBASLH)* is a peer-reviewed, refereed journal that welcomes submissions concerning communication and communication disorders from practitioners, researchers or scholars that comprise diverse racial and ethnic backgrounds, as well as academic orientations.

JNBASLH editorial board welcomes submissions from professionals or scholars interested in communication breakdown and/or communication disorders in the context of the social, cultural and linguistic diversity within and among countries around the world.

JNBASLH is especially focused on those populations where diagnostic and intervention services are limited and/or are often provided services which are not culturally appropriate. It is expected that scholars in those areas could include, but not limited to, speech-language pathology, audiology, psychology, linguistics and sociology. Articles can cover any aspect of child or adult language communication and swallowing, including prevention, screening, assessment, intervention and environmental modifications. Special issues of *JNBASLH* concerning a specific topic may also be suggested by an author or through the initiation of the editors.

Aims & Scope

Topics accepted for publication in *JNBASLH* could include, but is not limited to, the following:

- Communication breakdowns among persons due to culture, age, race, background, education, or social status
- Use of the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) framework to describe communication use and disorders among the world's populations.
- Communication disorders in underserved or marginalized populations around the world
- Service delivery frameworks for countries' minority populations, including those who are minorities for a variety of reasons including race, religion, or primary language spoken.
- Dialectical differences and their effects on communication among populations
- Evidence base practice research with culturally and linguistic diverse populations
- Provision of communication services in low income/resource countries
- Provision of communication services in middle income/resource countries
- Provision of communication services to immigrant and/or refugee populations
- Effects of poverty on communication development and the provision of services
- Education/training issues in serving diverse populations
- Ethical issues in serving diverse populations
- Role of religion in views of communication disability and its effect on service delivery

Submissions may include:

- research papers using quantitative or qualitative methodology
- description of clinical programs
- theoretical discussion papers
- scientifically conducted program evaluations demonstrating
- clinical forums
- works using disability frameworks or models effectiveness of clinical protocols
- critical clinical literature reviews
- case studies
- tutorials
- letters to the editor.

Submission of Manuscripts

All manuscripts should be accompanied by a cover letter (e-mail) in which the corresponding author:

- Requests that the manuscript be considered for publication;
- Affirms that the manuscript has not been published previously, including in an electronic form;
- Affirms that the manuscript is not currently submitted elsewhere;
- Affirms that all applicable research adheres to the basic ethical considerations for the protection of human or animal participants in research;
- Notes the presence or absence of a dual commitment;
- Affirms that permission has been obtained to include any copyrighted material in the paper; and
- Supplies his or her business address, phone and fax numbers, and e-mail address.

All manuscripts must be submitted electronically and should follow the style and preparation presented in the *Publication Manual of the American Psychological Association* (Sixth Edition, 2010; see Journal for exceptions to APA style). Particular attention should be paid to the citing of references, both in the text and on the reference page. Manuscript submissions and inquiries should be addressed to: nbaslh@nbaslh.org.

Preparation of Manuscripts

Manuscripts must be written in English. Authors are referred to recent copies of the journal and are encouraged to copy the published format of papers therein.

Text should be supplied in a format compatible with Microsoft Word for Windows (PC). All manuscripts must be typed in 12pt font and in double-space with margins of at least 1-inch. Charts and tables are considered textual and should also be supplied in a format compatible with Word. All figures, including illustrations, diagrams, photographs, should be supplied in .jpg format.

Authors must write clearly and concisely, stating their objectives clearly, defining their terms, and substantiating their positions with well-reasoned, supporting evidence. In addition, they are encouraged to review articles in the area they are addressing which have been previously published in the journal and, where they feel appropriate, to reference them. This will enhance context, coherence, and continuity for readers.

All submissions are considered by the editorial board. A manuscript will be rejected if it does not fall within the scope of the journal or does not meet the submission requirements.

Manuscripts deemed acceptable will be sent to a minimum of two reviewers. This journal uses double-blind review, which means that both the reviewer and author identities are concealed from each other throughout the review process. The Editor and Associate Editor will consider the reviews and make a decision regarding a manuscript. Decisions are made on a case-by-case basis, typically within 6 weeks from submission, and the Editor's decision is final.

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Editor's Note

It is a privilege to publish Volume 13, Issue 1 of the Journal of the National Black Association for Speech-Language and Hearing (JNBASLH). In this issue of JNBASLH, you will find four articles. Fannin, Crais, and Barbarin investigate mothers' communicative functions use with African American, European American, and Latino American boys and girls of middle and low socioeconomic status. Next, Ellis, noting that racial-ethnic disparities in aphasia outcomes may exist with worse outcomes among African Americans, provides a review that examines published research on African Americans with aphasia over a 25 year period. Then, Perryman and Watson explore associations between age of diagnosis in Autism Spectrum Disorder and caregiver factors above and beyond factors previously explored in the literature (e.g. race, SES, symptom severity). Finally, Ellis and Mayo seek to assist emerging scholars in understanding the scholarly publishing process, how it relates to critical milestones necessary for progress toward promotion and tenure, highlight traditional barriers that faculty from underrepresented groups frequently face, and offer solutions to overcome such barriers.

As always, I want to thank all of the scholars who submitted articles to JNBASLH and the reviewers who kindly reviewed them. I also want to thank the members of the editorial board, as well as the staff, who contribute to the success of each issue of JNBASLH. Undoubtedly, "Alone we can do so little; together, we can do so much" (Helen Keller).

Kenyatta O. Rivers, Ph.D., CCC-SLP
Editor

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CORRELATION BETWEEN COMMUNICATIVE FUNCTIONS OF MOTHERS AND PRESCHOOLERS OF DIFFERENT RACIAL AND INCOME GROUPS

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ABSTRACT

While language differences by gender, race/ethnicity, and socioeconomic status (SES) have been identified, the domain of pragmatics, specifically, communicative functions (CF) has been understudied. Hence, the purpose of this study was to investigate mothers' CF use with African American, European American, and Latino American boys and girls of middle and low SES. CFs were coded from each dyads' ($N=95$) learning and play interaction from the National Center for Early Development and Learning's (NCEDL, 2005) study of Family and Social Environments (Aikens, Coleman, & Bryant, 2008). Demographic factors were correlated with talkativeness, and *Directing* and *Mother Directing*, *Responding*, and *Projecting* were important predictors. Gender predicted child *Self-maintaining* and *Predicting*, and limited child demographic predictors suggest that they might not affect CFs as directly as mother CFs. Identification of associations among mother demographics and CFs can enhance comprehension of home communication styles for researchers and clinicians to better understand referral decision-making based on pragmatic indices for diverse preschoolers.

KEY WORDS: preschool, mothers, pragmatics, culture, socioeconomic status.

This research was supported in part by grants from the U.S. Department of Education and the Foundation for Child Development.

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Culturally and linguistically diverse (CLD) children, especially boys from minority racial/ethnic¹ groups and low socioeconomic status (SES) homes have disproportionately high rates of academic and social difficulties, culminating in an early emerging achievement gap (Barbarin, 2013; Jensen, 2009; Owens, 2016). The cumulative risk of these demographic features (Gutman, Sameroff, & Cole, 2003) also predicts increased *misidentification* for learning and socio-emotional problems (Artiles, 2011; Morrier & Gallagher, 2012; Wyatt, 1999), sometimes due to incongruence between socialization through parenting style versus classroom style (Barbarin, Downer, Odom, & Head, 2010; Nungesser & Watkins, 2005). Conversely, girl gender, higher SES, and a larger vocabulary in early childhood has predicted better behavior and academic outcomes (Morgan, Farkas, Hillemeier, Hammer, & Maczuga, 2015). Researchers' focus on deficient vocabulary as the reason for the achievement gap is supported by the "word gap" (i.e., low-income children being exposed to 30 million fewer words than higher-income peers prior to age 3; Hart & Risley, 1995) literature. Although less exposure to language can indeed have an effect on child language development, a perceived lexical deficit alone may not carry over into other domains pertinent to learning, such as, syntactical complexity or functional language (Baugh, 2017; Garcia & Otheguy, 2017). Further, the achievement gap persists despite efforts to close the word gap (Avineri, et al., 2015; Rothschild, 2016), while understudied domains like pragmatics can also impact the school experience (Hyter, Rivers, & DeJarnette, 2015). Therefore, additional study of pragmatics is in order.

Academics and Pragmatics

Pragmatics entails the use of non-verbal communicative intent and verbal utterances in social contexts that include prosody, joint attention, intonation, turn-taking, commenting, and responding to questions (Ninio & Snow, 1996). Pragmatic skills like presupposition

correlate with vocabulary, communicative competence, and metalinguistic skills, eventually supporting written and oral language comprehension (Carpendale & Lewis, 2006; Hoff, 2003; Hyter et al., 2015; Troia, 2011). Moreover, pragmatic competency is required to ask and answer questions, through which children gather knowledge and teachers assess that knowledge (Ryder & Leinonen, 2003). Altogether, insufficient pragmatic competence can lead to persistent social isolation, academic failure, and often presents as behavioral maladjustment, especially if the child does not reply to teachers as anticipated (Barbarin, 2013; Morrier & Gallagher, 2012; Timler, Vogler-Elias, & McGill, 2007). Communicative functions (CF) are a subcategory of pragmatics and defined as reasons for communicating. CFs that diverge from discourse expected in schools have been misconstrued as behavioral deficits (Delpit, 1995) but not often cited as a source of disproportionality (Nungesser & Watkins, 2005). Hence, this study aims to contribute to the scant data on the influence of mother CF use on CLD preschoolers' CFs at school entry.

Reasons for Teacher Referrals for Services

Some children have difficulty in school because they must adapt socio-cultural rules for language learned at home to a potentially conflicting school socialization style (Gillam, 2005; Halliday, 2002; Heath, 1982). For instance, Hart and Risley (2003) showed that adults in low SES homes tended to direct fewer words to their children than middle SES adults but Hall (1989) posits that a reduced quantity of words would be characteristic of a high-context culture where gestures might supplement verbal messages. Mainstream American schools are based on low-context cultures, suggesting that home-school incongruence might negatively impact academic success when CLD children from high-context homes' communication style is pathologized (Barbarin et al., 2010; Nungesser & Watkins, 2005). Failure to consider the relationship between home language and school

¹ Race is defined as groups of people with similar physical and biological traits considered significant by society, resulting in people treating others differently because of said traits (e.g., skin color). Ethnicity is shared cultural heritage characterized by traditions and perspectives that distinguish one group from another. While racial traits are inherited, ethnic traits are learned. As race/ethnicity is self-reported in the current study and entities such as the

American Anthropological Association (AAA) have identified difficulty in objectively separating race from ethnicity in large data collection efforts, consolidation of the two categories has been suggested to be more meaningful to Americans (AAA, 1997).

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pragmatic expectations may explain why some teachers refer CLD students for services more often. Although teachers agree that aspects of the home contribute to social competence and behaviors, they may be unaware of or underestimate the influence of the mothers' language on child interactions (Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996; Nungesser & Watkins, 2005).

Therefore, children's language reflecting parental language (Becker, 1994; Hall, 1989) formed the conceptual framework of this study. If a mother modeled certain CFs, it was anticipated that the child would also produce the same CFs more so than children whose mothers did not use these CFs as readily. This analysis adds another layer of inquiry into cultural relationships to CFs because the transactional nature of language is tied to the dyads' cultural patterns, with the goal of teaching the child to be competent communicators in their own culture (Ochs & Schieffelin, 1984; Rogoff, Mistry, Goncu, & Moiser, 1993).

Operationalization and Hierarchy of Communicative Functions

The few studies on CFs have varied on conceptualization where they have been coded at the interaction context, utterance, or social interaction levels (Chapman, 1981; Goffman, 1976; Ninio, Snow, Pan, & Rollins, 1994; Ninio & Snow, 1996; Pinnell, 2002; Searle, 1975), thereby hindering generalization. Joan Tough's (1984) codes are unique to mother-child CF interaction analyses in that they were designed for those older than 3 years old through adulthood, with codes representing what speakers think as they talk. No published norms of CF development exist, however, and most studies have only included middle SES, European American (EA), Standard American English speakers, with only a few describing CFs of CLD mother-child dyads (Blake, 1993; Hammer & Weiss, 1999; Pellegrini, Brody, & Stoneman, 1987).

Social cognitive researchers have expanded Piaget's (1959) theory of a developmental pattern for social understanding and language, though, to agree that CFs develop from lower level, directing functions to more complex heuristic functions (Bruner, 1986; Carpendale, 2006; Carpenter, Mastergeorge, & Coggins, 1983; Greene & Burleson, 2003; Hudson & Fivush, 1991; Lucariello, Hudson, Fivush, & Bauer, 2004; Owens, 2012; Pears & Moses, 2003; Tough, 1984; Westby, 2012). Yet, little

research exists on whether this hierarchy is the same across cultures, despite evidence that a) adult language input differs across racial/ethnic and SES groups (Hall, 1989; Hart & Risley, 2003; Hyter et al., 2015; Leaper & Smith, 2004; Qi, Kaiser, Milan, & Hancock, 2006) and; b) infants develop better facility with later emerging CFs with the help of adult scaffolding (Lucariello et al., 2004). Knowing that language development, social understanding, emergent literacy, and school readiness are directly influenced by adult-child interactions and the quality of home language (Vernon-Feagans, Bratch-Hines, & The Family Life Project Key Investigators, 2013), it is hypothesized that child CFs should be affected similarly by mother socialization methods like modeling and prompting.

Theoretical and Conceptual Framework

Inquiry into how CF use is influenced by mother CFs is grounded in Vygotsky's theory that cognitive and linguistic development is socially constructed and scaffolded by adults (Berk & Winsler, 1995), and the idea that language development is best understood with consideration for cultural and social contexts (Bredekamp & Copple, 2009; Castro, García, & Markos, 2013). The transactional model of development is also pertinent as increased complex expressive language represents the child's complex ideas, while proficiency in processing others' communicative input (receptive language) requires cognitive skills to form accurate responses (Becker, 1994; Bredekamp & Copple, 2009; McLean & Snyder-McLean, 1999; Snow, 1994). Yet, although the expressive language and cognitive development link manifests itself similarly across cultures, emergence of specific linguistic structures can differ (Paradis, Genesee, & Crago, 2011), possibly due to home language input. Teaching academic language through play at home is considered developmentally appropriate at age 4, but not all caregivers' early teaching and play methods match with subsequent school styles (Bredekamp & Copple, 2009). Therefore, the study of how cultural characteristics of language domains beyond vocabulary (e.g., CFs) might relate to academic achievement is still needed and could help clarify whether the design of school systems contribute to disproportionality (Gillam, 2005; Hosp, 2017). This proposed association between achievement and CF usage (grounded in Developmental Theory) that varies by communicative partner or cultural background (Sociocultural Theory) (Bredekamp & Copple, 2009)

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drives justification to examine language development across cultures.

Factors Influencing Communicative Function Use

Because mothers are the primary caregivers in early childhood, the quantity, complexity, and variety of their language influences the child's language, vocabulary, and literacy skills (Rowe, 2012; Tamis-LeMonda, Bornstein, & Baumwell, 2001), even where a mother may interact differently based on the child's gender (Barbarin & Jean-Baptiste, 2013; Blake, 1993; Hammer & Weiss, 1999; Kloth, Janssen, Kraaimaat, & Brutton, 1998; Pellegrini et al., 1987; Sperry, 1991). Race/ethnicity and SES have also been linked to interactions, resulting in different discourse styles (Hall, 1989; Hyter et al., 2015; Leaper & Smith, 2004; Qi, Kaiser, Milan, & Hancock, 2006), and these variations are artifacts of differences in values, beliefs, and motivations for communication (Chen, 2011; Ochs & Schieffelin, 1984).

Categories of maternal styles have been formed with "maternal responsivity" typified by increased, prompt, and appropriate responses contingent to child communicative acts. Responsive and sensitive styles have shown positive effects on child behavior outcomes (Gardner, Ward, Burton, & Wilson, 2003; Mesman, van Ijzendoorn, & Bakermans-Kranenburg, 2012) while Harsh parenting styles (which have been associated with specific racial/ethnic minorities and lower SES groups) characterized by more directive language predict poorer outcomes in some domains of language development (Brady-Smith et al., 2013; Coolahan, McWayne, Fantuzzo, & Grim, 2002; Flynn & Masur, 2007; Paavola, Kunnar, & Moilanen, 2005). Among 72 African American (AA) dyads that were low SES (Roberts, Jurgens, & Burchinal, 2005), however, mothers were responsive during storybook reading and; Blake (1993) described AA dyads as engaging each other or maintaining conversation. Fuligni and Brooks-Gunn's (2013) review of multicultural parenting found that styles do not always affect children similarly across cultures, to where directiveness has been a positive factor in some studies of Latino American (LA) and AA dyads. In fact, some have distinguished Directive mothering (i.e., moderate sensitivity and negativity, with directive

behavior) from Harsh mothering (i.e., forceful and very negative in declaring their agenda for play) (Brady-Smith et al., 2013); but Harsh mothering might be coded as Directive in other studies, thereby lowering the quality of what is categorized as directive. For these reasons, investigation of CFs like *Directing* and *Responding* across cultures may better inform the influence of mother CFs on CLD children.

Research Questions

Accordingly, this investigation was intended to augment data on preschool pragmatics, namely CFs, through a) consideration of the interlocutor (mother) versus a teacher or peer and; b) account of poverty level, race/ethnicity, and gender, using the following research questions:

- 1) What demographic factors and mother CFs predict children's CFs?
- 2) What is the correlation between demographic factors, mothers' CF use, and children's CF use during interactions?

Methods

This study draws from the Family and Social Environments study (Aikens et al., 2008), a 511-family subset of the National Center for Early Development and Learning (NCEDL, 2005) Multistate Study of Prekindergarten sample (N=960) randomly selected from five states (Georgia, New York, California, Illinois, and Ohio). Twenty-five interviewers contacted families via postcards and made follow-up, scripted phone calls to discuss the study, obtain verbal consent, and schedule home visits², with 296 families providing written consent.

Participants

Interactions of 95 English-speaking (primary non-English speakers were excluded) EA, AA, and LA custodial mother-child dyads that had complete data at the time of analysis were coded. 51% (n= 48) had incomes less than or equal to 150% of the federal poverty guideline (NCEDL variable name: Poor), which was \$32,107 for a household of five (USDHHS, 2001), qualifying them for state supported Pre-K programs. Due to inclusion criteria constraints on data available at the time, the distribution

² See Aikens, Coleman, and Barbarin (2008) for information on the Family supplement to the NCEDL study.

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was slightly imbalanced with 35% AA (60% Poor, 40% Non-Poor), 37% EA (46% Poor, 54% Non-Poor), and 28% LA (35% Poor, 65% Non-Poor), with boys at 46% of the sample. Mothers' mean educational level was 12.9 years, with 41% with a high school diploma as their highest level and 17% not having graduated from high school. All children were 4 years old and met the criteria for kindergarten eligibility for the next year. The average age was 53.86 months ($SE = 0.2$, range 48.12-59.60 months).

Procedures

Interviewers asked mothers to a) teach the child how to complete a maze on an Etch-a-Sketch toy; b) teach the child how to solve a block puzzle and; c) play with animal puppets. Dyads were videotaped in their homes during this interaction (NICHD, 2003) for up to 30 minutes (Mean duration of 15.14 minutes [$SD = 3.98$]) with the two learning tasks designed to be challenging for a 54-month-old to complete without assistance. Videos were transcribed and copied into Microsoft Excel 2000 for coding.

Development of coding system. A taxonomy was adapted from Tough's (1984) system. Broad codes were divided into cognitive distinctions that provide a more robust description of CFs, identifying variations in communicative intent (Hwa-Froelich et al., 2007). As Tough's system does not include "*Responding*," which was frequently observed in Stockman (1996) and Hwa-Froelich et al.'s (2007) samples of AA children from low SES homes, it was added, culminating in seven major categories (See Table 1): *Responding*: providing nonverbal/verbal replies; *Self-maintaining*: communicating needs; *Directing*: guiding/controlling others' actions; *Reporting*: referencing an activity or reflecting on an event; *Reasoning*: explaining a process; *Predicting*: using language to anticipate or get others to anticipate events; and *Projecting*: expressing how others might feel. Five codes were mutually exclusive, with one code per utterance, except in one case where double coding was allowed for *Directing* and *Reasoning* when participants reasoned with directive language (exemplifying the complication of assigning one CF per utterance [Llinares & Pastrana, 2013]). For example, "Make sure you look first to see if you can go that way" was coded as both "*Directing*: Guiding or Controlling the

Listener's Actions" and "*Reasoning*: Explaining a Process."

Training and reliability. The first author trained four research assistants (RAs) (two EA, one AA, one Asian American) to transcribe while watching videos. Interrater reliability was calculated on 15% of the sample with random checks performed to ensure $\geq 90\%$ reliability. Transcripts were segmented into Communication Units (C-Units), which are independent clauses with modifiers (Loban, 1976). Craig, Washington, and Thompson-Porter (1998) segmented into C-Units to allow single words (e.g., "yeah," "oh," "no") and other nonclausal verbalizations to serve as utterances, if in response to the adult. Hereafter, C-Units will be called "Utterances". One RA was trained to code by reviewing the taxonomy and practicing on non-study interactions. When disagreements arose in transcription and coding, RAs and the first author discussed differences for consensus. Intraclass Correlation Coefficient (ICC) estimates and their 95% confidence intervals were calculated using SPSS statistical package version 24 (IBM, 2016) based on a mean-rating ($k = 3$), absolute agreement, 2-way mixed effects model. Interrater agreement was calculated on 20%, yielding an ICC of .907 for all codes combined (excellent), with its 95% confidence interval ranging between .720 and .961. The ICC for child codes was .692, nearing acceptable reliability of .700, and ICC for mothers' codes was .934 (excellent). It is possible that diverging ICC for the children versus mothers reflected a developmental difference in language used by four-year-olds, resulting in a systematic effect on rater agreement. As mothers' language is more developed than preschoolers', their samples may be considered more stable and similar across mothers than language samples of preschoolers.

Measure. *Parent questionnaire (NCEDL 2005).* Race/ethnicity (AA, LA, EA, Asian/Indian, and Other), income, and gender were gathered via parental self-report.

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Table 1. Communicative Function Code Definitions.

		Major Code	Subcode	Example
Earlier Emerging	13-15 mo. (Carpenter, Mastergeorge, & Coggins, 1983)	Responding	Verbal or nonverbal reply or response to questions	“Yes” or nodding of head in response
	10-12 mo. (Ninio & Snow, 1996)		Positive reinforcement or encouragement in response to action	“Good job!”
	10-12 mo. (Ninio & Snow, 1996)		Verbal imitation of another’s utterance Responses used to maintain the interaction or indicate understanding	Child: “Yipee!” Mom: “Yipee!” “Uh-huh”, or “Okay”, or “I hear you”
	8-9 mo. (Carpenter, et al., 1983)	Self- maintaining	Communicating to meet the speaker’s needs to protect territory, property, or interests Criticizing others	“This is my space!” or “I want some ice cream.” “You’re always acting silly.”
	10-12 mo. (Ninio & Snow, 1996)		Expressing emotions	“I’m sad.”
10-12 mo. (Ninio & Snow, 1996)	Collaborating in actions with others including negotiating of presence and negotiating mutual attention		“Can I play?” or “Look at this.”	
10-15 mo. (Bates, Camaioni & Volterra, 1975)	Directing	Guiding or controlling the listener’s actions	Guiding one’s own actions	“Turn it.” or “Stop!”
10-14 mo. (Ninio & Snow (1996)				
3:6-5:7 for <i>indirect</i> Requests for Action (Garvey, 1975)				
9-10 mo. (Carpenter, et al. 1983)				
32 mo. (Ninio & Snow, 1996)	Reporting	Requesting information		“How do I do it?”
16-36 mo. (USDHHS, 2015)		Labeling		“That’s a dog.”
10-15 mo. (Dore, 1975)		Reference to details		“The lion is brown.”
8-36 mo. (USDHHS, 2015)				
9-13 mo. (Carpenter, et al., 1983)				

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	9-13 mo. (Carpenter, et al., 1983)		Reference to an activity, incident, or reflection on an event Reference to sequence	“I went to the park.” or “She keeps coming in here.” “One, two, three...” or “First he sits, stands, then last he walks.”
Later Emerging	after 32 mo. (Ninio & Snow, 1996)	Reasoning	Expressing cause-effect or dependent relationships	“When you turn this knob, it goes up.”
	48-60 mo. (USDHHS, 2015)		Explaining a process	“So you have to go left to get to the circle.”
	48-60 mo. (USDHHS, 2015)		Justifying actions or behaviors	“I shook it because it was messed up.”
	48-60 mo. (USDHHS, 2015)		Making comparisons	“It looks like that block.”
	48-60 mo. (USDHHS, 2015)		Questioning to scaffold and promote understanding	“What shape do you think goes there?”
	16-36 mo. (USDHHS, 2015) 16-36 mo. (USDHHS, 2015)		Identifying a problem Identifying a solution to a problem	“It’s too big for that.” “Smaller one can fit.”
	3-5 years old (Hudson, Shapiro, & Sosa, 1995; Hudson & Fivush, 1991; Lucariello, Hudson, & Fivush, 2004) 16-36 mo. (USDHHS, 2015; Ninio & Snow, 1996)	Predicting	Using language to anticipate events or to get another person to anticipate events	“I’m going to have stew for dinner.” or “We’re going to play with puppets later.”
	36 mo. 48-60 mo. (USDHHS, 2015)	Projecting	Expressing how others might feel or describing situations not experienced by the speaker	“That must make you sad” or “Giraffes must get scared of lions.”
	25-30 mo. social pretend play scripts (Bretherton 1984; Gearhart 1983; Howes, Unger, & Matheson, 1992; Nelson & Seidman 1984) 16-36 mo. (USDHHS, 2015)	Imagining	Using language in the process or act of pretending	“Roar! I’m Mr. Lion and am eating you!”

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Stepwise multiple linear regression models with 16 predictors (seven mother CFs, *Mother Total Utterances*, gender, AA mothers, EA mothers, LA mothers, AA children, EA children, LA children, and poverty), and dependent variables of seven child CF frequencies and *Child Total Utterances* were conducted. Two stepwise multiple linear regressions with 11 predictors (*Early* and *Late Emerging Mother* CFs, *Mother Total Utterances*, gender, AA mothers, EA mothers, LA mothers, AA children, EA children, LA children, and poverty), and dependent variables of *Child Total Utterances*, *Early Emerging Child* CFs, and *Late Emerging Child* CFs were run.

To account for smaller, uneven groups once categorized by race/ethnicity, gender, and poverty level, nonparametric (Dallal, 2000), Spearman's correlations ($p \leq .05$) between the *Child Early Emerging* and *Child Late Emerging* CFs, *Child Total Utterances*, and potential correlates comprised of the frequency of all seven mother CFs, demographics, and *Mother Total Utterances*, were run. The alpha value for significance was set at the $\leq .05$ level. The term 'talkativeness' (Leaper & Smith, 2004) refers to *Total Utterance* variables for both mothers and children. All race/ethnicity was measured by the frequency of mothers who were of each racial/ethnic group (AA, EA, LA); child gender was coded as 1=girl, 0=boy, Poor was coded as 1=yes, 0=no; and each CF was measured as the frequency of the CF.

Results

To ensure that language samples were comparable, the total amount of seconds spent in a) each interaction; b) the block task; c) the maze task and; d) free play served as dependent variables in three, Independent Samples Median tests with race/ethnicity, gender, and poverty as independent variables. There were no significant duration differences by group, so entire interactions were included in the analysis.

Mother CF Predictors of Child CFs

Descriptive statistics for a) the frequencies of all seven child CFs disaggregated by poverty, race/ethnicity, and gender are presented in Table 2 and; b) mothers' CF frequencies are shown in Table 3. *Responding* and *Reporting* occurred most often for children, and *Directing* and *Reasoning* were most common for mothers. As

illustrated by the aforementioned right skewed distribution of *Projecting* and *Predicting*, both occurred the least for dyads.

Predictors of Child Responding. The first regression showed that *Child Total Utterances* and *Mother Directing* $F(2, 92) = 60.541, p < .001$, with an $R^2_{adj} = .559$, accounted for 56% of the variance. The predicted proportion of *Child Responding* was equal to $-.056 + .107$ (*Mother Directing*) + $.401$ (*Child Total Utterances*). Table 4 summarizes the regression models.

Predictors of Child Self-maintaining. *Child Total Utterances* and gender produced $F(2, 92) = 31.349, p < .001$, with an $R^2_{adj} = .392$, accounting for 39% of the variance. The predicted proportion of *Child Self-maintaining* equaled $-.441 + .401$ (gender) + $.239$ (*Child Total Utterances*).

Predictors of Child Directing. The regression indicated that *Child Total Utterances* and *Mother Reporting* produced $F(2, 92) = 116.878, p < .001$, with an $R^2_{adj} = .711$, accounting for 71% of the variance. The predicted proportion of *Child Directing* was equal to $.167 - .151$ (*Mother Reporting*) + $.555$ (*Child Total Utterances*).

Predictors of Child Reporting. *Child Total Utterances* and *Mother Reporting* produced $F(2, 92) = 74.465, p < .001$, with an $R^2_{adj} = .610$, accounting for 61% of the variance. The predicted proportion of *Child Reasoning* was equal to $.007 + .153$ (*Mother Reporting*) + $.429$ (*Child Total Utterances*).

Predictors of Child Reasoning. *Child Total Utterances*, *Mother Directing*, and *Mother Reasoning* produced $F(3, 91) = 795.503, p < .001$, with an $R^2_{adj} = .751$, accounting for 75% of the variance. The predicted proportion of *Child Reasoning* was equal to $-.843 + .211$ (*Mother Reasoning*) - $.343$ (*Mother Directing*) + $.591$ (*Child Total Utterances*).

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Table 2. Descriptives of Frequencies of Child Communicative Functions by Race/Ethnicity, Poverty, and Gender.

Communicative Function	M (SD)	European American				African American				Latino			
		Poor Girls Boys (n= 9) (n= 9)	Boys (n= 7)	Non Poor Girls (n= 10)	Non Poor Girls (n= 11) (n= 9)	Poor Boys (n= 9) (n= 6)	Non Poor Girls (n= 6)	Boys (n= 7)	Poor Girls (n= 6)	Boys (n= 6)			
Self-Maintaining	2.33 (0.6)	2.40 (1.1)	2.61 (0.8)	1.61 (0.8)	1.92 (0.7)	1.53 (1.4)	2.21 (0.8)	1.71 (1.3)	2.17 (0.9)	1.72 (0.6)	2.62 (0.9)	2.17 (0.9)	
		2)	9)	6)	5)	5)	6)	5)	9)	3)	8)	4)	3)
Directing	3.91 (1.0)	4.24 (1.6)	5.57 (1.3)	4.51 (1.8)	4.52 (1.3)	4.20 (1.5)	4.55 (1.2)	4.30 (1.6)	3.63 (1.3)	5.30 (1.6)	5.16 (1.6)	3.63 (1.3)	
		7)	3)	0)	4)	4)	9)	4)	0)	4)	9)	3)	4)
Reporting	4.25 (1.1)	4.39 (1.4)	6.25 (1.0)	4.91 (1.2)	4.88 (1.5)	4.82 (1.2)	4.82 (0.7)	4.91 (1.8)	4.91 (1.1)	5.20 (2.2)	5.64 (1.5)	5.87 (1.3)	
		8)	1)	4)	4)	7)	5)	0)	3)	7)	6)	6)	0)
Reasoning	2.70 (1.7)	2.72 (2.0)	4.89 (2.1)	2.97 (1.4)	2.88 (1.2)	2.40 (1.5)	3.00 (1.0)	2.67 (1.8)	2.07 (1.7)	3.37 (1.9)	3.48 (0.9)	4.03 (1.0)	
		8)	1)	9)	8)	6)	1)	0)	2)	0)	3)	3)	3)
Predicting	0.27 (0.5)	1.00 (0.7)	0.97 (0.7)	1.14 (0.5)	1.24 (1.1)	1.02 (0.8)	1.27 (1.1)	0.70 (1.3)	0.28 (0.6)	0.97 (0.5)	0.60 (0.5)	1.33 (0.2)	
		4)	1)	1)	3)	9)	4)	3)	3)	3)	2)	9)	8)
Projecting	0.00 (0.0)	0.43 (0.5)	0.34 (0.7)	0.00 (0.0)	0.25 (0.5)	0.11 (0.3)	0.50 (0.8)	0.20 (0.5)	0.65 (0.9)	0.40 (0.6)	0.27 (0.5)	0.17 (0.4)	
		0)	3)	3)	0)	8)	3)	4)	3)	9)	4)	4)	1)
Responding	4.83 (1.5)	5.25 (1.9)	5.78 (1.3)	4.60 (0.4)	5.13 (1.7)	4.98 (1.6)	4.54 (1.2)	5.25 (1.8)	4.24 (1.1)	4.97 (1.1)	5.60 (1.3)	5.37 (0.9)	
		1)	3)	7)	8)	3)	8)	9)	3)	4)	6)	4)	7)

Note. M = Mean, SD = Standard Deviation.

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Table 3. Descriptives of Frequency of Mother Communicative Functions by Race/Ethnicity and Poverty.

Communicative Function		European American		African American		Latino American	
		Poor (n= 17)	Non Poor (n= 19)	Poor (n= 20)	Non Poor (n= 13)	Poor (n= 11)	Non Poor (n= 15)
Self-Maintaining	M	1.47	1.73	2.20	1.96	1.61	1.92
	(SD)	(0.97)	(0.85)	(0.79)	(1.33)	(0.92)	(0.83)
Directing		10.15	10.19	11.78	12.12	11.16	11.50
		(2.15)	(2.09)	(2.30)	(2.05)	(2.20)	(1.41)
Reporting		5.55	6.78	5.37	6.24	6.54	6.17
		(1.27)	(1.33)	(1.64)	(0.96)	(1.18)	(0.85)
Reasoning		8.51	9.62	10.04	10.49	9.48	10.62
		(2.52)	(2.75)	(1.81)	(2.83)	(2.33)	(1.47)
Predicting		1.56	2.13	1.74	2.07	1.83	2.01
		(1.02)	(0.88)	(1.23)	(1.13)	(1.19)	(0.78)
Projecting		1.12	0.92	1.02	1.09	1.14	1.12
		(0.86)	(0.74)	(0.69)	(0.89)	(0.87)	(0.94)
Responding		5.12	6.82	4.86	5.96	6.26	6.39
		(1.04)	(1.00)	(1.66)	(1.29)	(1.28)	(1.37)

Note. M = Mean, SD = Standard Deviation.

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Table 4. Summary of Linear Regression Analysis for Mothers' CFs Predicting Child CFs (N=95).

Child CF	Predictor Variable	B	β	Sig.	95% CI B	
					Lower	Upper
CRES	TotalCh	.410**	.698	.000	.328	.492
	MDIR	.107*	.163	.023	.015	.199
CDIR	TotalCh	.555**	.897	.000	.480	.631
	MREP	-.151*	-.136	.029	-.286	-.016
CSELF	TotalCh	.239**	.588	.000	.174	.305
	Gender	.401*	.205	.012	.088	.713
CREP	TotalCh	.429**	.714	.000	.344	.514
	MREP	.153*	.143	.048	.001	.305
CREA	TotalCh	.591**	.843	.000	.516	.667
	MDIR	-.343**	-.437	.000	-.471	-.214
	MREA	.211**	.296	.001	.092	.330
CPRE	MPRE	.394**	.486	.000	.250	.538
	TotalCh	.114**	.327	.000	.052	.177
	MREA	-.087**	-.245	.007	-.149	-.024
	MraceAA	.400**	.228	.007	.111	.688
CPRO	Gender	-.290*	-.173	.034	-.559	-.022
	TotalCh	.056**	.248	.013	.012	.101
	MPRE	.131**	.249	.012	.029	.234
	MPRO	.150*	.221	.021	.023	.277
TotalCh ¹	MREP	.590**	.331	.002	.226	.955
	MPRE	.515*	.222	.033	.042	.989
CEarly	TotalCh	1.748**	1.023	.000	1.619	1.878
	MEarly	.163**	.170	.003	.057	.270
	CLate	-.110**	-.095	.013	-.197	-.024
	TotalMo	-.159*	-.121	.029	-.301	-.016
CLate	TotalCh	1.874**	1.273	.000	1.288	2.459
	MLate	.548**	.677	.000	.428	.668
	TotalMo	-.567*	-.502	.000	-.731	-.403
	CEarly	-.512*	-.594	.004	-.858	-.166
TotalCh ²	MLate	.238**	.433	.000	.136	.340

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Predictors of Child Predicting. The best fitting model for *Child Predicting* involved *Mother Predicting*, *Child Total Utterances*, *Mother Reasoning*, *AA Mothers*, and gender $F(5, 89) = 13.190, p < .001$, with an $R^2_{adj} = .393$, accounting for 39% of the variance. The predicted proportion of *Child Predicting* equaled $-.082 - .290$ (gender) + $.400$ (*AA Mothers*) - $.087$ (*Mother Reasoning*) + $.114$ (*Child Total Utterances*) + $.394$ (*Mother Predicting*).

Predictors of Child Projecting. *Child Total Utterances*, *Mother Predicting*, and *Mother Projecting* predicted *Child Projecting* at $F(3, 91) = 11.470, p < .001$, with $R^2_{adj} = .250$, accounting for 25% of the variance, with the predicted proportion of *Child Projecting* equal to $-.701 + .150$ (*Mother Projecting*) + $.131$ (*Mother Predicting*) + $.056$ (*Child Total Utterances*).

Predictors of Child Total Utterances¹. *Mother Reporting* and *Mother Predicting* produced $F(2, 92) = 13.323, p < .001$, with an $R^2_{adj} = .208$, accounting for 21% of the variance. The predicted frequency of *Child Total Utterances* was equal to $5.099 + .515$ (*Mother Predicting*) + $.590$ (*Mother Reporting*).

Predictors of Child Early Emerging CFs. Descriptive statistics for frequencies for emergence of CFs and talkativeness are shown in Table 5. All mothers had more utterances than their children, and both mothers and children used a higher frequency of *Early Emerging* CFs than *Late Emerging* CFs.

The second regression showed that *Child Total Utterances*, *Mother Early Emerging*, *Child Late Emerging*, and *Mother Total Utterances* produced $F(4, 90) = 481.480, p < .001$, with an $R^2_{adj} = .953$, accounting for 95% of the variance. The predicted proportion of *Child Early Emerging* CFs was equal to $-.239 - .159$ (*Mother Total Utterances*) - $.110$ (*Child Late Emerging*) + $.163$ (*Mother Early Emerging*) + 1.748 (*Child Total Utterances*).

Predictors of Child Late Emerging CFs. *Child Total Utterances*, *Mother Late Emerging*, *Mother Total Utterances*, and *Child Early Emerging* produced $F(4, 90) = 97.823, p < .001$, with an $R^2_{adj} = .805$, accounting for 81% of the variance. The predicted proportion of *Child Late Emerging* CFs was equal to $-.464 - .512$ (*Child Early*

Emerging) - $.567$ (*Mother Total Utterances*) + $.548$ (*Mother Late Emerging*) + 1.874 (*Child Total Utterances*).

Predictors of Child Total Utterances². *Mother Late Emerging* CFs produced $F(1, 93) = 21.411, p < .001$, with an $R^2_{adj} = .178$, accounting for 18% of the variance. The predicted proportion of *Child Total Utterances* was equal to $5.107 + .238$ (*Mother Late Emerging*).

Neither race/ethnicity or SES predicted individual child CFs and gender only predicted *Child Self-maintaining*. Hence, it is presumed that correlations, if any, between demographic variables and child CFs would be weak. Further, high degree, positive correlations between within-dyad race/ethnicity would be expected, as 99% of the dyads were of the same race/ethnicity, with a converse, negative relationship expected between each racial/ethnic group, as seen in the descriptive analyses of the same participants (Kasambira Fannin, Barbarin, & Crais, 2018). For this reason, correlations were conducted only between individual mother CFs and *Child Early* and *Late Emerging* CFs, and *Total Utterances* (See Table 6 for correlation matrix).

Demographics and CF type correlations. In examining the relationships between demographic factors and CFs, poverty was negatively correlated with *Child Total Utterances*, both *Child Early* and *Late Emerging* CFs to a small degree, *Mother Reporting* to a small degree, and *Mother Responding* to a medium degree. Mothers who were AA had small, negative correlation to *Mother Responding*, but also a medium, positive correlation with *Mother Directing*. Mothers who were EA were negatively correlated to a small degree with *Mother Reasoning* and *Total Mother Utterances*, while they had a medium, negative association with *Mother Directing*.

Mother-child CF correlations. All CF correlations were positive. For example, *Mother Responding* had medium correlations to *Child Total Utterances*, and *Child Early* and *Late Emerging* CFs. *Mother Self-maintaining* had a small correlation to *Child Total Utterances*, *Child Early Emerging* CFs, and a medium relationship with *Child Late Emerging* CFs. *Mother Directing* had a small correlation to *Child Total Utterances*, and a medium correlation to *Child Early Emerging* CFs. *Mother Reporting* had medium correlations to *Child Total*

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Table 5. Descriptives of Talkativeness and Frequency of Early and Late Emerging Communicative Functions by Race/Ethnicity, Poverty, and Gender.

CF		EA Children				AA Children				LA Children				Mothers			Mothers		
		Poor		Non Poor		Poor		Non Poor		Poor		Non Poor		EA	AA	LA	Non Poor		
		Girls (n= 9)	Boys (n= 7)	Girls (n= 10)	Boys (n= 9)	Girls (n= 11)	Boys (n= 9)	Girls (n= 6)	Boys (n= 7)	Girls (n= 6)	Boys (n= 6)	Girls (n= 9)	Boys (n= 6)				EA (n= 16)	AA (n= 20)	LA (n= 12)
CLATE	M (SD)	7.28 (3.18)	9.46 (3.45)	12.18 (3.22)	8.56 (2.94)	9.55 (2.96)	8.28 (3.51)	11.26 (3.20)	9.36 (5.26)	7.57 (4.15)	10.38 (4.95)	10.29 (1.85)	10.93 (2.09)						
CEARLY	M (SD)	15.33 (2.37)	16.29 (5.25)	20.21 (4.07)	15.61 (2.19)	16.46 (4.19)	15.53 (4.81)	16.13 (3.29)	16.17 (5.59)	14.86 (3.75)	17.19 (5.02)	19.03 (3.60)	18.81 (2.10)						
TOTCH	M (SD)	8.63 (1.76)	9.21 (2.83)	11.84 (2.37)	9.14 (1.57)	9.43 (2.46)	8.92 (2.61)	9.14 (1.89)	9.28 (3.21)	8.23 (2.42)	9.94 (3.16)	10.74 (1.60)	10.85 (1.33)						
MLATE	M (SD)													16.60 (3.74)	18.86 (4.48)	19.22 (4.46)	18.80 (4.40)	20.82 (4.85)	21.15 (3.31)
MEARLY	M (SD)													22.30 (4.18)	24.22 (5.40)	25.57 (3.84)	25.52 (4.06)	26.28 (3.63)	25.98 (2.69)
TOTMO	M (SD)													15.32 (3.11)	17.49 (3.41)	17.62 (2.93)	17.43 (3.12)	18.66 (3.24)	18.36 (2.07)

Note. M = Mean, SD = Standard Deviation, CF = Communicative Functions, CLATE = Child Frequency of Late Emerging CFs, MLATE = Mother Frequency of Late Emerging CFs, CEARLY = Child Frequency of Early Emerging CFs, MEARLY = Mother Frequency of Early Emerging CFs, TOTCH = Total Child Utterances, TOTMO = Total Mother Utterances.

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Table 6. Spearman's Correlations between Mothers' and Children's Communicative Functions and Demographic Factors.

	TotalCh	TotalMo	EarlyCh	LateCh	MRES	MSELF	MDIR	MREP	MREA	MPRE	MPRO	Gender	Poor	MraceEA	MraceAA	MraceLA
TotalCh	1.000															
TotalMo	.380**	1.000														
EarlyCh	.970**	.418**	1.000													
LateCh	.757**	.244*	.719**	1.000												
MRES	.388**	.514**	.402**	.341**	1.000											
MSELF	.205*	.236*	.236*	.327**	.245*	1.000										
MDIR	.279**	.921**	.332**	.145	.265**	.144	1.000									
MREP	.420**	.699**	.457**	.345**	.577**	.214*	.542**	1.000								
MREA	.315**	.907**	.317**	.164	.345**	.143	.804**	.479**	1.000							
MPRE	.361**	.361**	.340**	.400**	.328**	.100	.239*	.453*	.277**	1.000						
MPRO	.260*	.256*	.272**	.274**	.299**	.295*	.178	.239*	.174	.251*	1.000					
Gender	.058	.023	.087	.035	-.047	-.142	.018	.066	.038	.041	-.160	1.000				
Poor	-.256*	-.192	-.231*	-.251*	-.389**	.008	-.050	-.263*	-.169	-.187	.040	.010	1.000			
MraceEA	.007	-.246*	-.009	-.018	.085	-.198	-.333**	.041	-.254*	.022	-.040	.029	-.052	1.000		
MraceAA	-.128	.129	-.135	-.068	-.268**	.188	.255*	-.161	.155	-.076	-.012	-.032	.147	-.570**	1.000	
MraceLA	.129	.130	.154	.093	.193	.015	.090	.127	.111	.057	.056	.002	-.101	-.479**	-.448**	1.000

Note: TotalCh= Total Child Utterances, TotalMo= Total Mother Utterances, EarlyCh = Child Early Emerging CFs, LateCh = Child Late Emerging CFs, MRES = Mother Responding, MSELF= Mother Self-Maintaining, MDIR= Mother Directing, MREP= Mother Reporting, MREA= Mother Reasoning, MPRE= Mother Predicting, MPRO= Mother Projecting, Gender = Child gender (girl=1, boy=0),

Poor = Is Family Poor (1=yes, 0=no), MraceAA= African American mothers, MraceEA= European American mothers, MraceLA= Latino American mothers, *p < .05, **p < .01.

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Utterances and *Child Early and Late Emerging CFs*. *Mother Reasoning* had medium correlations to *Child Total Utterances* and *Child Early Emerging CFs*. *Mother Predicting* had medium correlations to *Child Total Utterances* and *Child Early and Late Emerging CFs*. *Mother Predicting* had small correlations with *Child Total Utterances* and *Child Early and Late Emerging CFs*.

Mother Total Utterance links to Child CFs. *Mother Total Utterances* had a medium, positive correlation with *Child Early Emerging CFs*, and a small correlation with *Child Late Emerging CFs*. *Child Total Utterances* positively correlated to all mother CFs, ranging from small to medium strengths.

In summary, demographics rarely predicted or correlated with child CFs. *Mother Reporting* had the strongest correlation with *Child Total Utterances*, *Early Emerging CFs*, and *Late Emerging CFs*. *Mother Responding* had the next strongest positive correlations to child CFs. *Mother Total Utterances* was correlated with both early and late emerging CFs but regression clarified that it negatively predicted the two child variables. *Mother Early Emerging CFs* positively predicted *Child Early Emerging CFs*, and *Mother Late Emerging CFs* predicted *Child Late Emerging CFs*. Yet, an inverse relationship occurred within the child where *Child Early Emerging CFs* negatively predicted *Child Late Emerging CFs* and *Child Late Emerging* negatively predicted *Child Early Emerging CFs*.

Discussion

The positive prediction of *Mother Reporting*, *Reasoning*, *Predicting*, and *Projecting* suggests that preschoolers are receptive to copying adults' more complex CF models, which can be supported by developmental theory positing that caregivers are important teachers prior to school entry during naturalistic interactions that involve play (Becker, 1994; Bredekamp & Copple, 2009; Ochs & Scheiffelin, 1984; Rowe, 2012; Tamis-LeMonda et al., 2001), versus only didactic teaching situations.

Talkativeness. *Mother Total Utterances* had a medium, positive correlation with *Child Total Utterances*, medium correlation with *Child Early Emerging*, and small correlation with *Child Late Emerging CFs*. *Mother Total Utterances* also predicted *Child Late* and *Early Emerging CFs*, all of which are integral to preschool success, but

these were negative predictions and a mother's increased talkativeness has been deemed characteristic of directive parenting (Brady-Smith et al., 2013; Coolahan et al., 2002; Flynn & Masur, 2007; Paavola et al., 2005). Hence, although talkative mothers were positively correlated to child CFs and child talkativeness, these were small to medium links and talkative mothers actually suppressed both early and late emerging CFs in children when considering prediction. *Child Total Utterances* positively predicted all child CFs, which makes sense that more talkative children would have more opportunity to demonstrate a wider variety of CFs and show more proactive functional language than a quieter child.

CFs and demographics. *Child Self-maintaining* involves the crucial skill of self-expression of emotions; where a deficit could have lasting effects on socio-emotional development and ensuing academic success for boys (Barbarin, 2013; Cole et al., 1996; Owens, 2016), which is why it remains a concern. Gender predicted (along with *Child Total Utterances*) *Child Self-maintaining*, showing that boys were associated with a smaller amount of *Self-maintaining*, which coincided with other analyses of this dataset (Kasambira Fannin et al., 2018) and other research showing similar gender differences in *Self-maintaining* subcodes like expressing emotions (Cole et al., 1996; Leaper & Smith, 2004; Middleton, 1992). This finding would be consistent with other findings (Eisenberg et al., 2001) that parents' positive expression of emotions (*Self-maintaining*) were related to children's regulation or social functioning; while other factors within the boys, such as their overall social competency (Kasambira Fannin, Barbarin, & Crais, 2017), may have accounted for some of the variance between boys and girls.

The fact that gender and *Mother Reasoning* predicted *Child Predicting* negatively might call for a different type of analysis to, first, determine if there were differences in how mothers interacted with boys versus girls, and second, to see if any interaction style differences affected child CF use. If mothers of girls used *Predicting* less and *Reasoning* more than mothers of boys, this might explain the lower frequency of *Predicting* in girls to some degree. Essentially, mothers of boys may emerge as a distinct subgroup to be analyzed in future CF research; be it a t-test of mothers of boys versus mothers of girls, or a within group analysis of mothers of both genders determining whether the same mother interacts differently with her son than her daughter (Kloth et al., 1998; Sperry, 1991).

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Mothers who were AA (along with *Mother Predicting* and *Child Total Utterances*) positively predicted *Child Predicting*, and this was the only demographic feature besides gender that predicted a child CF. Thus, mother characteristics appear to positively influence *Child Predicting* more than gender.

The next demographic feature of note was race/ethnicity. *Mother Directing* had a positive correlation with mothers who were AA, while they were negatively correlated with *Mother Responding*, which was confirmed by Kasambira Fannin et al. (2018) where dyads that were AA had a smaller proportion of *Responding* and more *Directing* than dyads that were EA and LA. *Directing* is more prevalent in an authoritarian or Active-Restrictive parenting style, which has been found to be a less responsive parenting style (Coolahan, et al., 2002). The increased use of *Directing* on the part of AA mothers supports previous research characterizing some non-EA parents as being more directive and authoritarian and vice versa, as evidenced by current results of *Mother Directing* and *Reasoning* being negatively correlated with EA dyads. However, more research has determined that SES may have a stronger influence on parenting style than race/ethnicity and that parents of the same race/ethnicity are not necessarily monolithic in their parenting styles (Coolahan et al., 2002). Further, some nuances of directive parenting styles have been found to be protective of AA children but not of EAs (Flynn & Masur, 2007). Thus, broad generalizations by race/ethnicity should be considered with caution (Baugh, 2017; Garcia & Otheguy, 2017) and approached in an emic way (Hyter et al., 2015). The current regression does not bring to bear any positive predictors involving EAs, LAs, or AAs for *Responding* or *Directing*, but the racial/ethnic and SES correlation to *Directing* and *Responding* is important to query into the most at-risk students (AA, low SES boys).

In contrast to other studies, mothers in the current study who were Poor were not linked with *Directing*, even in combination with AA race/ethnicity. Poverty did not predict any child CFs, but it was negatively correlated with *Child Total Utterances* (as seen in families of low SES by Hart and Risley [2003]), and *Child Early* and *Late Emerging* CFs. There was, however, a negative correlation between Poverty and *Mother Reporting* and *Mother Responding*; and mothers' responsiveness has been a consistent positive factor in child language development (Girolametto & Weitzman, 2002).

Important Mother CF predictors. When considering *Mother Responding*, Girolametto and Weitzman (2002) describe a strong relationship between center-based child care providers' responsiveness and variation in the preschoolers' language productivity. Researchers like Risley and Hart (2006) also support the strategy of using responsive language with preschoolers when extrapolating this idea to mother responsiveness in early childhood fostering quantity and quality of preschool child language. When using *Mother Responding* as an indicator of responsiveness in the current analysis, however, it should be noted that it did not predict any of the child CFs. So, it appears that these data do not prove that increased frequency of *Mother Responding* predicts desired CFs in children as previous studies (Beckwith & Rodning, 1996; Flynn & Masur, 2006; Paavola, et al., 2005; Tamis-LeMonda et al., 2001; Yoder & Warren, 2001) have found with language development in general. But, *Mother Responding* had a negative correlation with mothers who were AA and mothers who were Poor, so a line of inquiry into whether decreased *Responding* affects CF development might be indicated. *Mother Responding*, however, did not predict child performance on standardized measures of vocabulary, receptive and expressive language, or teacher ratings of social competence (Kasambira Fannin et al., 2017), so this negative correlation might be simply a language difference that does not explain those three child outcomes sometimes used to refer children at school entry.

Mother Directing's negative prediction of *Child Reasoning* follows the expectation that increased *Mother Directing* might suppress a later emerging child CF like *Reasoning*, but this being the only negative predictor and the lack of negative correlations between *Mother Directing* and child CFs shows that a directive style might not be so detrimental to child CF production. Still, child aptitude in *Reasoning* is essential in preschool settings (U.S. Department of Health and Human Services [USDHHS], 2011). For example, *Reasoning* involves the academic skills of analysis, comparing and contrasting, or expressing and understanding cause and effect relationships (Tough, 1984; USDHHS, 2015). *Reasoning* is also associated with more complex linguistic structures, facilitating a connection between oral language and the literate language used to learn (Hwa-Froelich et al., 2007). Current results suggest that use of *Reasoning* may be compromised for children who are AA if they are more

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exposed to *Mother Directing* (reflected by *Mother Directing* being positively correlated with mothers who were AA). Despite *Mother Directing*'s negative predictive power for *Child Reasoning*, it correlated positively with *Child Early Emerging* CFs. That correlation could be attributed to the fact that a common type of *Mother Directing* was a Request for Information. *Mothers* often asked children questions, which resulted in child utterances in the form of *Responding* or *Reporting* (Kasambira Fannin et al., 2018).

Rather, a more broad index of language like *Mother Late Emerging* CFs positively predicted *Child Total Utterances* so mothers' use of more complex CFs might augment child CF quantity. As expected, mothers' *Early* and *Late Emerging* CFs predicted *Child Early* and *Late Emerging* CFs, but the presence of *Child Late Emerging* CFs negatively predicted *Child Early Emerging* and vice versa. Perhaps this was a reflection of theoretical development where we should not see as much child *Early Emerging* language at the same time as *Late Emerging*. For example, as children move through toddlerhood, they prefer words to representational gestures (Capone & McGregor, 2004) and at age 4, we still expect to see gestures but want them coupled with verbalizations, with less use of gestures only as the child ages. In the case of CFs, a child must use *Directing*, *Self-maintaining*, *Responding*, and *Reporting* throughout the day, but when they learn more sophisticated CFs like *Reasoning*, *Predicting*, and *Projecting*, we associate preschool success with more facility with these later emerging CFs. Further analyses might answer whether the activity type contributed to the inverse relationship between child early and late emerging CFs where learning activities (2/3 if the interaction) were characterized by more early than late emerging CFs, or if there is a developmental expectation to replace less complex CFs with later emerging ones.

Continued refinement of pragmatic research has far reaching implications for preschool children who have been identified as at risk for academic difficulty. Cumulative risk models (Gutman et al., 2003) speculate that the race/ethnicity and SES of the homes should have correlated with or predicted CF usage, but only gender and mothers being AA partially predicted frequency of *Child Self-maintaining* and *Child Predicting*. Rather, it was mother talkativeness, *Mother Predicting*, *Mother Projecting*, and *Mother Directing* that predicted the child

CF use. Poverty did correlate negatively to *Child Total Utterances*, *Mother Reporting*, and *Mother Responding*, which parallels other analyses of the same dataset (Kasambira Fannin et al., 2018) that found children who were Poor to be less talkative and mothers who were Poor and AA to use less *Responding* than Non-Poor, EA, and LA dyads. Hence, the data appear to be triangulated.

Limitations

One limitation was that other variables in the NCELD database like household size or mother educational level were not analyzed, which may have explained more variance. Further, all children attended preschool and they may exhibit CF usage differently than those who do not. Subcategorization of the sample by demographic factors also reduced group sizes. However, the total sample size was larger than previous preschool pragmatic studies, and included different income and racial/ethnic groups.

Implications

The persistent achievement gap has driven research on potential causes, such as cultural influences on language development, but the domain of pragmatic development for CLD preschoolers has been not been investigated as often, even though it has implications for social and academic success (Hyter et al., 2015). This study addresses that breach in the literature by a) examining correlations between mother and child CFs and demographics and; b) identifying what mother CFs might predict preschoolers' CFs during home teaching and play interactions. This is of interest to speech-language pathologists and educators because knowledge of how CLD mothers contribute to language development might ultimately inform those devising strategies to sharpen referral accuracy and design appropriate intervention plans (Hammer & Weiss, 1999; van Kleeck, 1994).

When considering predictors of child CFs, mother's talkativeness suppressed both early and late emerging child CFs, while the child's talkativeness positively predicted child CFs. Thus, one could say less talkativeness on the mother's part can predict increased child talkativeness, which, in turn, positively predicts all child CFs required for classroom interactions and socialization (Hart & Risley, 2003). Indeed, it is typical for high context cultures like AA to have fewer words when communicating (Hall, 1989) and the results may be

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showing simply a difference in interactions, rather than a deficit (Baugh, 2017; Hyter et al., 2015). Hence, SLPs and teachers might refrain from the assumption that a less talkative caregiver has a negative impact on child language. *Mother Predicting*, *Mother Projecting*, *Mother Reporting*, and *Mother Reasoning* were among the few mother CFs that positively predicted child CFs, and tend to be later emerging, bolstering existing data showing that applying pragmatic skills with an increased cognitive load (e.g., child response to indirect parental input) facilitates acquisition of more complex pragmatic skills (Becker, 1994), supporting advice for parents to increase the *quality* of language interactions in particular, not necessarily the quantity.

In-service training on how to support early language development has been found to be successful for preschool teachers (Dickinson & Caswell, 2007; Girolametto, Weitzman, & Greenberg, 2006). For example, teachers can set up the environment (e.g. provision of symbolic materials and dress up clothes for dramatic play) to create situations that elicit later emerging CFs like *Predicting* and *Projecting* (Pinnell, 2002). Thus, it stands to reason mothers might also be taught to facilitate CF development, with a focus on specific pragmatic skills at home to prepare their children for successful learning, and SLPs can do this by ensuring that caregivers are also provided the same symbolic play strategies for use at home with their children.

Talking with adults about future occurrences (*Prediction*) is the natural context in which preschoolers learn how to plan future events and understand future time. The modeling effect that emerged with *Prediction* supports findings that discussions of future events can facilitate development of children's explicit understanding of future time (Lucariello et al., 2004) and that modeling of *Predicting* can foretell a higher frequency of *Child Predicting*, which is encouraged in preschool settings (Hwa-Froelich et al., 2007). The same explanation can be used where *Mother Predicting* and *Mother Projecting* together were significant predictors of *Child Projecting*, which should be developed in the first few years of life (Callaghan et al., 2005), and is therefore an opportune time for mothers to purposefully model these later emerging CFs. This presents additional evidence that mothers should promote development of certain CFs by modeling or, at the least, providing indirect exposure to the CF (Becker, 1994; Hammer & Weiss, 1999). Again,

SLPs can help promote parent education indirectly through in-services presented to teachers or daycare providers on what specific CFs parents can model; or if the SLP encounters a family as an Early Interventionist, they can emphasize the importance of modeling CFs that increase the child's cognitive load. In summary, *Mother Total Utterances* may positively relate to individual child CFs weakly, but a child's talkativeness was positive and strong for correlations and predictions of all child CFs. Thus, if choosing between providing adult models/language input or letting the child talk, the goal might be to allow a child to talk more during learning and play interactions.

Studies have also shown strong links among oral language and subsequent behavior and reading development (Barbarin & Jean-Baptiste, 2013; Vernon-Feagans et al., 2013). The current CFs are a form of oral language that can represent both behavior (e.g., *Self-maintaining*, *Directing*) and academic (e.g., *Reporting*, *Predicting*) skills that teachers use to refer children. Hence, additional data on how preschoolers and mothers use CFs before school entry might inform scientists about potential reasons for subsequent referral of particular students. That children's language is linked to parental language (Becker 1994; Hart & Risley, 2003) and the type of language stimulation affects the quality of children's communication skills is supported by differences in CFs related to social difficulty (e.g., *Self-maintaining*) experienced by low income, preschool boys of color. Though normative data are needed to draw conclusions, we would surmise that child race/ethnicity should not yet correlate to the CFs demonstrated at school entry as much as mother CF input, poverty, or gender might, as race/ethnicity did not correlate with or predict any child CFs. How mothers interact with different genders might also guide future inquiry into why boys of color, especially those from low SES households, are still disproportionately referred.

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AFRICAN AMERICANS AND APHASIA: A 25 YEAR REVIEW

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ABSTRACT

Aphasia is a devastating communication disorder that commonly occurs after stroke and reduces the quality of life of the stroke survivor. There is considerable concern that racial-ethnic disparities in aphasia outcomes may exist with worse outcomes among African Americans that parallel worse general stroke outcomes. To date, there have been few attempts to organize and explore the aphasia literature to better understand the impact of aphasia in African Americans. Therefore, the objective of this review was to examine research in African Americans with aphasia over a 25 year period to organize the findings, further discussion, and stimulate research.

KEY WORDS: aphasia, African Americans, health equity

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Introduction

Aphasia is a communication disorder that negatively impacts a stroke survivor's communication ability (language comprehension, language expression, reading, writing, attention, cognition) and frequently requires rehabilitative care (American Speech-Language-Hearing Association, 2017). The presence of aphasia is most commonly due to a stroke. The National Aphasia Association estimates the more than 2 million Americans are affected by the condition (National Aphasia Association, 2018). The most recent evidence suggests aphasia occurs in approximately 18% of all stroke survivors discharged from U.S. hospitals (Ellis, Hardy, Lindrooth, & Peach, 2017). Even in its mildest form, individuals with aphasia can experience social isolation and significant limitations in societal participation because of their communication deficits (Dalemans, DeWitte, Beurskens, Van Den Heuvel, & Wade, 2010; Mazaux et al., 2013).

Because aphasia is a condition that occurs after stroke and racial-ethnic differences exist in stroke-related outcomes, there is concern that race-ethnicity may be a key factor in the study of aphasia. For example, stroke is condition where African Americans are more likely to: a) experience a stroke at a younger age (Roth et al., 2011), b) die from stroke (Howard, 2013), c) and have greater levels of post-stroke disability (Ellis, Magwood, & White, 2017; Ellis, Boan, Turan, Ozark, Bachman, Lackland, 2015). Additionally, stroke is on the decline in the U.S. however decreases in stroke incidence does not exist among African Americans (Kleindorfer et al., 2010). Therefore, the study of racial-ethnic differences in post-stroke outcomes for conditions such as aphasia is critical to adequately understanding aphasia and the effects of the condition. To date, there has been little programmatic study of the condition in African Americans. Nor has there been systematic reviews to reconcile the literature related to aphasia in African Americans. Therefore, the

objective of this paper was to present the findings of a systematic review of aphasia in African Americans covering the past 25 years.

Methods

The search strategy followed general PRISMA guidelines (Moher, Liberati, Tetzlaff, J., & Altman, 2009) to identify articles related to aphasia in African Americans. An electronic search for all relevant articles was conducted with PubMed/Medline and PsycINFO. The search was limited to aphasia in African Americans that met the following inclusion criteria: a) published in English language, b) African Americans with aphasia, and c) published between January 1993 and December 2017. A secondary search of the journal *Aphasiology* was completed because it is not Medline/PubMed or PsycINFO indexed but the study of aphasia is the predominate focus of the journal. A final search of Google & Google Scholar was completed to broaden the search in attempts to identify articles related to the topic of interest.

The search terms for this project included: "African Americans", OR "Blacks" AND "aphasia". A multi-step screening process was conducted. First, search results were uploaded into EXCEL and duplicates were removed. The titles and abstracts were independently screened by the author. Abstracts with at least one "maybe" or "yes" were selected for full-text review. The author independently reviewed full articles for inclusion. Additionally, the author engaged in hand-searching through relevant journal searches and examination of bibliographies of included studies and review articles that emerged with the search strategy. After a review of full text articles, articles that did not meet inclusion criteria were excluded from the review. The search strategy is presented in Figure 1. Because of the heterogeneity of studies a meta-analysis was not performed, but instead to perform a qualitative analysis of the study findings.

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Table 1. Rate of Aphasia – Studies including African Americans with aphasia and a comparison to a second racial-ethnic group.

Author(s)/Year	Sample	Outcomes	Findings
Mochari-Greenberger et al., 2015	Stroke sample=398,798 275,938 White 75,934 AA 31,546 Hispanic 13,172 Asian 2,208 Other	Presence of aphasia using NIHSS	Frequency of aphasia was significant different between racial/ethnic and sex groups. AA males more likely to have aphasia (OR=1.07) with white males as reference group. AA females have some likelihood of having aphasia as white females (OR=1.0) but higher likelihood than Hispanic, Asian and Other females.
Ellis et al., 2017a	21,280 White w/aphasia 4,333 AA w/aphasia 1,719 Hispanic w/aphasia	Presence of post-stroke aphasia	AAs age 19-44, 45-54, 55-64 at least two times more likely to have aphasia than Whites at the same age.

AA – African American; NIHSS – National Institutes of Health Stroke Scale

Results

Included studies

Sixty-one articles meeting inclusion criteria were identified through an initial search. Abstracts were reviewed for the inclusion criteria and 43 reports were excluded due to duplicate abstracts or absence of aphasia. Full-text articles were obtained for 17 articles of which two articles were excluded due to an absence of a clear measure of aphasia. Fifteen articles were included in this study. For consistency of reporting, the ethnic term African American was used for reporting the outcomes of studies utilizing the racial-ethnic term non-Hispanic Black (Blacks).

Characteristics of included studies

The fifteen studies included in this review consisted on two studies reporting racial-ethnic comparisons of aphasia incidence between

African Americans and Whites, five studies that included aphasia clinical outcomes among a single group of African Americans, six studies that reported racial-ethnic comparisons of aphasia clinical outcomes between African Americans and Whites/Caucasians, and two studies reporting racial-ethnic comparisons of aphasia economic outcomes (length of stay and costs) between African Americans and Whites.

Racial-ethnic differences in rates of aphasia

Two studies quantified incidence of aphasia between African Americans and Whites. Mochari-Greenberger and colleagues (2015) reported the incidence of aphasia among 398,798 stroke survivors admitted to The Guidelines-Stroke hospitals from 2011-2014. They found that African Americans had the highest likelihood of having aphasia (OR=1.07) as measured by the NIH Stroke Scale (NIHSS) when compared to Whites and Hispanics. Ellis et al. also measured

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rate of aphasia using Agency for Healthcare Quality Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) data from eight states (OR, AZ, CO, FL, KY, NC, SC, AR) and found that the presence of aphasia overall was 18% of all discharged stroke patients but rates among individuals ages 19-44, 45-54, and 55-64 was higher among African Americans when compared to Whites. See Table 1 for data on racial-ethnic differences in rates of aphasia.

Aphasia Outcomes in African Americans - Studies of only African Americans

Five studies were completed to study the unique features of aphasia in African Americans. All studies were completed by Ulatowska and colleagues at the University of Texas at Dallas. Four of the five studies completed comparisons of African Americans with aphasia to non-neurologically impaired African Americans. The fifth study included 12 African Americans and was designed to measure the relationship between discourse and performance on the Western Aphasia Battery (WAB). Ulatowska and colleagues found that a) ethnic repetition patterns were maintained among African Americans despite the presence of aphasia (Ulatowska et al., 2000), b) distinctive features of African American language remained present although to a lesser degree among individual with aphasia (Ulatowska et al., 2001a), c) African Americans with aphasia performed lower than African Americans without aphasia on standardized measures of aphasia but similar on picture description tasks (Ulatowska et al., 2001b), d) dialectical verb use was preserved in African Americans with mild-moderate forms of aphasia (Ulatowska & Olness, 2001) and e) there was a significant relationship between WAB aphasia quotient (AQ) and discourse measures among African Americans with aphasia (Ulatowska et al., 2003). However, in the final study ethnic features of African Americans was present in functional open-ended task but not fable retelling (Ulatowska et al., 2003). The collection of studies by Ulatowska and colleagues showed that many ethnic features of language are retained in African Americans with aphasia and

discourse can offer a more robust method for exploring language-related issues in African Americans with aphasia. See Table 2 for studies of the impact of aphasia on ethnic features of the language of African Americans.

Racial-ethnic differences in aphasia clinical outcomes

Six studies reported potential racial-ethnic differences in aphasia clinical outcomes. Wertz, Auther, & Ross (1997) found that African Americans had lower scores on the Porch Index of Communicative Ability (PICA) gestural and graphic modality scores at 48 weeks post-onset, however both groups demonstrated the same amount and rate of improvement. Olness et al. (2002) found no significant differences between African Americans and Caucasians on several standardized batteries for aphasia. In contrast, Ellis & Peach (2016, 2017) found racial-ethnic differences in aphasia clinical outcomes using data from the AphasiaBank. The AphasiaBank, a database designed to offer aphasia researchers a large shared database of clinical and aphasia data (Forbes, Fromm, MacWhinney, 2012). In a study of 290 individuals with aphasia, AA's exhibited lower scores on the Boston Naming Test (BNT) when compared to Whites (4.8 vs 6.5; $p=.000$) (Ellis & Peach, 2016). Similarly, African Americans scores lower on the auditory comprehension (49.3 vs 53.3; $p=.02$) and verbal fluency (5.5 VS 7.6; $P=.015$) subtests of the WAB (Ellis & Peach, 2017). Two final studies (Olness et al., 2010 & Ulatowska et al., 2011) used more qualitative focused analyses and reported minimal differences between the two groups, however traditional statistical comparisons of outcomes were not completed

Racial-ethnic differences in aphasia economic outcomes (service utilization and costs of care)

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Table 2. Aphasia Clinical Outcome – Studies including only African Americans with Aphasia.

Author(s)/Year	Sample	Outcomes	Findings
Ulatowska et al., 2000	36 AA w/aphasia 40 AA w/o aphasia	Use of repetition	Ethnic repetition patterns were maintained among AA w/aphasia despite mild language deficits
Ulatowska et al., 2001a	33 AA w/aphasia 30 AA w/o aphasia	WAB, TT, ASHA FACS, discourse assessment of personal narrative	AAs with aphasia performed lower than AA's w/o aphasia on WAB-AQ and cortical quotients, TT and ASHA FACS. Features of AA English were present in both groups. No significant differences between groups on measures of language quantity but high quality among AAs w/o aphasia.
Ulatowska et al., 2001b	36 AA w/aphasia 36 AA w/o aphasia	WAB, ASHA FACS, deriving lesson from fables and proverb interpretation	AAs with aphasia performed lower than AA's w/o aphasia on WAB, ASHA FACS, deriving lesson from fable and spontaneous interpretation of proverbs. No significant differences in picture description fable task or multiple choice proverb task.
Ulatowska & Olness 2001	36 AA w/aphasia 38 AA w/o aphasia	Verb use in narratives	Dialectical use of AAVE are preserved in mild –moderate forms of aphasia.
Ulatowska et al., 2003	12 AAs w/aphasia (moderate severity)	WAB, discourse evaluation (fable retell, narrative from picture description, personal narrative)	Significant relationship between WAB-AQ and discourse coherence quality ratings and reference. No ethnic features present during fable retelling. Discourse issues may be task specific. Ethnic features most present in functional open-ended tasks

AA – African American; WAB-AQ – Western Aphasia Battery Aphasia Quotient; TT – Token Test; ASHA FACS – ASHA Functional Assessment of Communication Skills for Adults; AAVE – African American Vernacular English

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Table 3. Aphasia Clinical Outcome – Studies including African Americans with aphasia and a comparison to a second racial-ethnic group.

Author(s)/Year	Sample	Outcomes	Findings
Wertz et al., 1997	14 AA w/aphasia 37 Caucasians w/aphasia	PICA, TT	At 48 weeks post-onset of aphasia, AAs had lower PICA gestural and graphic modality scores. Overall groups demonstrated same amount and rate of improvement.
Olness et al., 2002	33 AA w/aphasia 30 AA w/o aphasia 29 Caucasians w/aphasia 32 Caucasians w/o aphasia	WAB, TT, ASHA FACS, discourse	No significant differences between AAs and Caucasians with aphasia on WAB AQ, TT, ASHA FACS. No significant differences were observed between the two groups on quantity measures of discourse.
Olness et al., 2010	12 AA w/aphasia 10 AA w/o aphasia 5 Caucasians w/aphasia 6 Caucasians w/o aphasia	WAB, discourse	No comparisons between racial-ethnic groups
Ulatowska et al., 2011	15 AA w/aphasia 18 Caucasians w/aphasia	Use of reported speech in narratives	Minimal differences in use of reported speech between the two groups
Ellis & Peach, 2016	29 AA w/aphasia 261 Whites w/aphasia	BNT	Lower mean scores among AAs (4.8) compared to Whites (6.5) after controlling for age, education, duration of aphasia and treatment duration
Ellis & Peach, 2017	29 AA w/aphasia 261 Whites w/aphasia	WAB	No significant differences between groups on total WAB-AQ. Lower scores among AAs on WAB-R word fluency and auditory comprehension subtests

AA – African American; PICA – Porch Index of Communicative Ability; WAB – Western Aphasia Battery-Revised (WAB-R) Aphasia Quotient (AQ); TT – Token Test; ASHA FACS – ASHA Functional Assessment of Communication Skills for Adults; BNT – Boston Naming Test

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Table 4. Service Utilization/Costs – Studies including African Americans with aphasia and a comparison to a second racial-ethnic group.

Author(s)/Year	Sample	Outcomes	Findings
Ellis et al., 2017b	1181 AAs w/aphasia 3150 White w/aphasia	Length of stay, cost of care	AAs w/aphasia experienced 2 day longer length of stay and ~\$2800 greater cost of care compared to Whites.
Ellis et al., 2017c	1181 AAs w/aphasia 3150 White w/aphasia	Length of stay, SLP service utilization, SLP costs	AAs w/aphasia experienced 2 day longer hospital length of stay and were 5% more likely to use SLP services. AAs also received .57 more SLP visits at \$61 greater cost.

AA – African American; SLP – speech language pathology

Two recent studies explored racial-ethnic differences in economic-related outcomes among individual with aphasia. In the first study, Ellis, Hardy & Lindrooth (2017) examined racial-ethnic differences in general healthcare utilization and cost of care among individuals with stroke-related aphasia in the state of North Carolina (NC). They found that African Americans experienced longer length of stays (+1.9 days) and at greater costs (+\$2047) when compared to Whites. Longer length of stays and at greater costs persisted among African Americans even after controlling for stroke severity, illness severity, hospital characteristics, and unobserved hospital characteristics. In a follow study of speech language pathology (SLP) utilization and cost of care among individuals in the state of NC with stroke, Ellis, Peach, Hardy and Lindrooth (2017) found that African Americans with aphasia were: a) more likely to receive speech language pathology (SLP) services and b) received more SLP visits at greater costs even when compared to Whites even after controlling for stroke severity, illness severity, hospital characteristics, and unobserved hospital characteristics. These studies collective findings suggest in the state of NC, African Americans with aphasia experience longer length of stays, receive more SLP services and at a

greater cost of care when compared to Whites with stroke in NC.

Discussion

Aphasia is a condition that occurs after stroke resulting in significant communication problems due to expressive and receptive language deficits. A twenty-five year review of literature suggests that a comprehensive agenda designed to explore aphasia in African Americans has yet to emerge. The lack of a specific agenda to examine this issue is a great concern because studies of aphasia and stroke (the primary cause of aphasia) continue to show that African Americans may be more susceptible to aphasia and in more severe forms (Ellis, 2009). Despite the limited number of studies identified in this review, several studies offer evidence of more severe aphasia impairment among African Americans when compared to Whites (Ellis & Peach, 2016; Ellis & Peach, 2017; Wertz, Auther, & Ross, 1997). These findings should not be a surprise because the general stroke literature has consistency shown that African Americans are more likely to experience a stroke (the primary cause of aphasia) (Benjamin et al., 2018) resulting in worse post-stroke outcomes (Centers for Disease Control, 2005; Ellis, Magwood, & White, 2017; Ellis,

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Boan, Turan, Ozark, Bachman, Lackland, 2015) when compared to their White counterparts.

Overall however, this review shows minimal advancement in the understanding of aphasia in African Americans over the past 25 years. Studies by Ulatowska, Olness and colleagues provide a solid foundation for the study of aphasia in African Americans by showing the many distinctive features of communication among African Americans (e.g. African American Vernacular English, repetition patterns among African Americans) are maintained at least in mild to moderate forms of aphasia (Ulatowska et al., 2000); Ulatowska et al., 2001a; Ulatowska et al., 2001b; Ulatowska & Olness, 2001; Ulatowska et al., 2003). Collectively these studies are grounded in the notion that single arm studies of a specific minority populations are critical to limiting ethnocentric bias that can occur and lead to diagnostic inaccuracy and ultimately mismanagement (Lucas et al., 2005). Yet until studies by Peach and Ellis (2016, 2017), little advancement has occurred in the study of this condition among African Americans.

There are at least two reasons why a programmatic study of aphasia in African Americans is urgently needed. First, reports from the Agency for Healthcare Research and Quality (AHRQ) consistently show worse health-related outcomes among African American and other racial-ethnic minority populations (AHRQ, 2016). The underlying causes of these disparities are unclear and not specifically tied to absence of health insurance a common explanation for racial-ethnic disparities in health-related outcomes. The National Healthcare Quality and Disparities Report suggests that differences in quality of services received is a contributor to disparities in health-related outcomes and an area of great concern. To date, it is unclear how these issues translate to racial-ethnic disparities in aphasia outcomes. It is notable that recent legislation in the form of the Patient Protection and Affordable Care Act (PPACA) was designed to improve access to insurance and subsequently access to quality healthcare (Patient Protection

and Affordable Care Act, 2010). However, despite far more African Americans and other racial-ethnic minorities being insured with affordable health insurance, the likelihood of their having greater access to specialized care for conditions such as aphasia has yet to be established. Similarly, it is unclear if greater enrollment in insurance plans has translated into better quality of care for African Americans with aphasia.

Second, the findings of studies by Ellis and colleagues related to cost of care and speech-language pathology (SLP) service utilization offer an additional area of concern. Studies of general hospital care and SLP care showed: a) longer acute care length of stays, b) greater SLP service utilization and c) greater cost of care (hospital and SLP services) among African Americans with aphasia when compared to Whites. These findings are in contrast to studies of aphasia clinical outcomes which showed worse outcomes or greater levels of aphasia-related impairment among African Americans. These conflicting findings should lead clinicians and aphasiologists to ask how or why a racial-ethnic groups receiving greater specialized SLP care are exhibiting worse aphasia clinical outcomes. Obviously these studies of aphasia-related economic outcomes (length of stay, cost of care, service utilization) have been limited to the acute care setting and in a single state. However, they raise a number of questions for current investigators interested in aphasia research. For example, are the opposing findings of greater service utilization in acute care settings but worse long-term aphasia outcomes attributed to: a) differential patterns of care in other areas of the care continuum (inpatient rehab, outpatient rehab, home health, etc), b) differences in quality of care in acute care and other areas of the care continuum, or c) are there unique aspects of aphasia in African Americans that result in racial-ethnic differences in aphasia outcomes. A systematic and programmatic line of research is urgently needed to unravel and explain these issues related to African Americans and ultimately answering these questions will

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improve outcomes in all individuals with aphasia regardless of their racial-ethnic background.

Conclusion

Despite being a high risk population for stroke, the primary underlying cause of aphasia, studies designed to explore the cause and implications of aphasia in African Americans have been slow to emerge. African Americans appear to be a higher risk for aphasia as well as stroke and more likely to have worse aphasia clinical outcomes when compared to Whites. Why comprehensive research agendas designed to study this condition in African Americans is unclear. However, the research opportunities are plentiful for the next generation of scholars whose interest lies in understanding aphasia and other neurologically based disorders of communication in this high risk racial-ethnic minority population.

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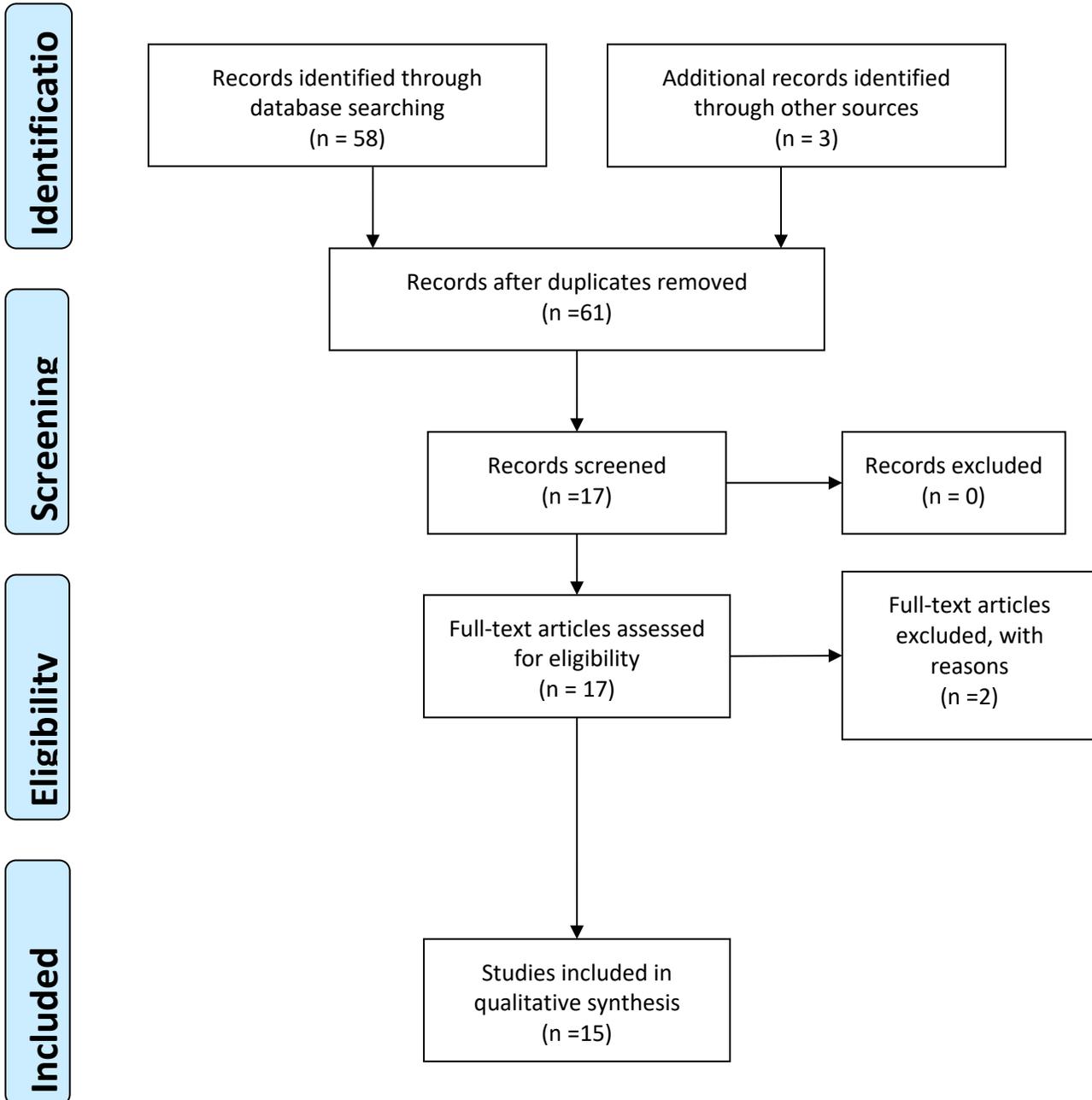
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Figure 1. PRISMA Flow Diagram.



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CAREGIVER PERCEPTIONS AND THE AGE OF AUTISM SPECTRUM DISORDER DIAGNOSIS

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ABSTRACT

In an effort to understand what may lead to differences in age of diagnosis for children with Autism Spectrum Disorder (ASD), this study investigated correlates of the timing of diagnosis. These correlates include individual differences in magnitude of concerns about early “red flag” behaviors and attributions of initial symptoms. The findings indicate that caregivers’ level of worry about initial ASD symptoms and caregivers’ attributions of the symptoms to behavioral challenges were related to age of ASD diagnosis. These findings are consistent with the hypothesis that individual differences in caregivers’ knowledge and interpretation of symptoms related to ASD may have an impact on age of ASD identification, and may have implications for promoting public awareness of symptoms related to ASD.

KEYWORDS: autism, diagnosis, parents, attributions, perceptions

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Research has shown that there is a positive relationship between younger entry age into intensive intervention and eventual placement into less restrictive educational settings for children with Autism Spectrum Disorders (ASD; Harris & Handleman, 2000; Dawson et al., 2010). In fact, Koegel, Koegel, Ashbaugh, and Bradshaw (2014) recently published a commentary on compiled data that suggests that, in general, children who receive early intervention services are more likely to be included in regular education classrooms and see a significant reduction of their symptoms. ASD is a complex developmental and neurologically based disorder that affects reasoning, feelings, communication, and social interactions across contexts (American Psychiatric Association, 2013). The Centers for Disease Control and Prevention ([CDC], 2018) estimates that it impacts 1 in 68 children and is reported in all racial, ethnic, and socioeconomic groups. Early diagnosis is not only the gateway to EI services but it also can improve parents' understanding of their children's developmental challenges and lessen parental stress (Koegel et al., 2014). Studies of parental attitudes toward ASD diagnosis have documented feelings of relief and increased family support due to having an explanation for unexplained behaviors (Mansell & Morris, 2004; Osborne & Reed, 2008). Given the importance and benefits of early diagnosis, it is critical to examine and document factors that may delay or hinder early diagnosis.

The referral and diagnostic process for children with developmental disorders, such as ASD, often begins with parental recognition, initiation, and presentation of relevant concerns to medical providers. Previous research on parental reporting behavior has focused on whether or not parents recognized/reported the presence of atypical development (De Giacomo & Fombonne, 1998) and what types of symptoms were associated with age of recognition by parents (Chawarska et al., 2007). However, very few researchers have examined why parents might not report atypical development. One class of potential causes of not reporting atypical development is parental causal attributions about the symptoms (i.e., beliefs about the origins), which thus may be associated with and contribute to the timing of ASD diagnosis. To further understand the potential impact of variation in beliefs on caregivers' bringing their concerns to the attention of physicians, it is useful to consult the Health Belief Model (Rosenstock, 1974). The major premise of the Health Belief Model is that individuals will take action

to ward off or screen for health conditions if they see themselves (or their children) as vulnerable to the condition, have a sense of serious associated consequences, feel that the course of action available to them would be beneficial, and perceive that the anticipated barriers of taking the action are outweighed by its benefits (Strecher, Champion, & Rosenstock, 1997). Extending this model to parents seeking help for suspected developmental difficulties for a young child, a parent would have to see their child as vulnerable to or demonstrating signs of developmental disabilities, believe that the absence of intervention for concerning behaviors could lead to less favorable outcomes, and believe that seeking professional help is worth potential difficulties faced from various sources of resistance (e.g., discord among other family members, financial concerns, navigating complex health systems, fear of labels, etc.).

When determining whether a child is demonstrating or susceptible to developmental difficulties, parents will have to depend on their personal knowledge and expectations regarding infant behaviors, which are influenced by culture, family values, education, and past experiences (Bornstein, 2012). Past research has indicated that some parents may view infants as having the capacity to be purposively difficult or willful (i.e. negative intentionality; Reznick, 1999; Burchinal, Skinner, & Reznick, 2010). A study examining the beliefs systems of mothers with young child between the ages of 2 and 18 months of age found two sets of beliefs among the participants. The first set of beliefs held that infants were too young to understand right from wrong, while the second set of beliefs credited infants with the capacity to misbehave intentionally and supported the need for discipline to respect the mother's authority (Burchinal, Skinner, & Reznick, 2010). Thus, if parents attribute initial symptoms of autism to willfully difficult behavior, then they may choose to deal with early behaviors related to ASD independently and forgo professional support. Dealing with behaviors solely within the family context may continue until behaviors reach a personally defined threshold of unacceptable and concerning (Rao, 2000). Additionally, labels such as developmental disorder or delay may be in direct conflict with how parents interpret or perceive their children's behavior (Bussing, Schoenberg, Rogers, Zima, & Angus, 1998). As such, some families may genuinely disagree with the notion of "disability" because they hold different views of typical development and expectations regarding

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development than do professionals (Rao, 2000). This reaction may be particularly present in cases where the child's developmental disability is accompanied by little to no physical impairment, as is often the case with ASD. Essentially, differential interpretation of and reaction to behaviors associated with developmental disabilities, including ASD, may determine whether caregivers raise concerns and seek professional guidance, more specifically a diagnosis.

Findings from studies examining diagnosis or recognition of ASD indicate that several dynamics may influence age of diagnosis, including: (a) physician knowledge and practices (Sices, Feudtner, McLaughlin, Drotar, & Williams, 2004); (b) severity of ASD symptoms (Giacomo & Fombonne, 1998; Mandell, Novak, Zubritsky, 2005); (c) access to healthcare (Mandell et al., 2005); (d) race/ethnicity (Mandell, Listerud, Levy, & Pinto-Martin, 2002); (e) IQ level (Mandell et al., 2009; Shattuck et al., 2009) and (f) developmental history, including a regressive versus non-regressive pattern (Shattuck et al., 2009). Although these factors may explain a portion of the variance in the age of diagnosis of ASD, the impact of caregiver perceptions and beliefs has yet to be examined in the literature.

In the current study, we used retrospective methods to measure parental perceptions. These retrospective methods were chosen as an initial step toward designing instruments and generating hypotheses for future prospective studies. Many discoveries and important advances in early identification of children with ASD began with retrospective studies. For example, retrospective video studies and parental interviews have provided researchers with a framework for classifying early emergent behaviors in children who have later been diagnosed with ASD (Baranek, 1999; Osterling & Dawson, 1994; Watson, Baranek, Crais, Reznick, Dykstra, & Perryman, 2007). Such studies have been instrumental in helping identify behaviors that have been informally observed by clinicians and families, yet had not been measured in early identification efforts prior to such studies. For instance, studies by Osterling and Dawson (1994) and Baranek (1999) highlighted hypo-responsiveness to social stimuli by infants later diagnosed with ASD as demonstrated by a failure to orient readily to name calls. Subsequently, this characteristic has become a standard question in present-day assessments, screening tools, and questionnaires used to detect social

communication difficulties. Such hypothesis-generating studies provided important information to researchers regarding which behaviors should be studied prospectively in large investigations of infants in the general population, and eventually informed clinical practice.

Similarly, we wanted to begin to expand our understanding of what may help distinguish between children who get diagnosed at younger ages versus those who get diagnosed at older ages. Because of caregivers' essential roles in the referral process, we decided to begin there. However, a significant challenge was that no one had examined parents' pre-diagnostic causal attributions of their children's behavior related to ASD and the potential association of such attributions with age of ASD diagnosis. This necessitated the development of new instruments as part of the current project in order to look at these types of questions.

The aim of this study was to examine expected associations among parental causal attributions about behaviors associated with ASD and the child age of ASD diagnoses, above and beyond demographic correlates of age of diagnosis previously suggested in the literature: race/ethnicity, severity, and SES. This study reports on additional analyses of data derived from participants included in a previous study (Perryman, Watson, & Chumney, 2018). The current study expands on the previous literature by examining factors related to early perceptions of ASD symptoms and their relationship to age of diagnosis. The hypothesized correlates of age of diagnosis outside of these demographic factors are: (a) levels of concern about initial ASD symptoms and (b) attributions about initial ASD symptoms.

Method

Participants

A total of 192 North Carolina caregivers (59 Black; 131 White; 2 other racial identities) of children with a current diagnosis of ASD were recruited for this study. With one exception (a caregiver recruited via a private practice agency) caregivers were recruited through the University of North Carolina Neurodevelopmental Disorders Research Center (NDRC) Autism Registry (N=191). The families in the NDRC registry had previously agreed to be contacted for research participation. Inclusion criteria

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for the participants were that they be primary caregivers of a child with ASD. In addition, participants were only included if they had a child who: (a) was from 3 to 11 years old; (b) was diagnosed with ASD at 12 months or older by a qualified medical professional, service provider, or agency; (c) was ambulatory, with no severe motor impairments, other genetic disorders, evidence of other neurological impairments, or significant co-existing medical conditions; and (d) had a Social Responsiveness Scale ([SRS] Constantino, 2005) total scale score consistent with a diagnosis of ASD. Initially, the registry mailed 650 informational flyers to caregivers whose children fit the inclusion criteria to inform them about the study. Next, we mailed packages, which included the SRS, to 210 caregivers who agreed to participate in the study (see section below for description of SRS). Of the 210 questionnaire packages mailed, 192 were returned. We applied the inclusion criteria (e.g., meeting ASD threshold on SRS) for the participants who returned the questionnaires. After applying the inclusion criteria, a total of 168 caregivers remained eligible for the study. Thus, a total of 24 participants were excluded from the study because they did not meet the inclusion criteria. Tables 1 and 2 summarize the demographic characteristics for the participants.

Table 1. Demographic Characteristics (Categorical Variables).

Participant Characteristics	N	%
Gender (Female; Respondent)	157	92
Gender (Male; Child)	113	66
Race		
Black	50	30
White	118	70
Educational Status (Maternal)		
No High School Diploma or GED	4	2
Completed High School or GED	20	12
Some college or technical school	39	24
Associate Degree	25	15

Bachelors Degree	51	31
Graduate or Professional Degree	27	16
Place of Residency		
Large City	18	11
Suburb	42	25
Small town or city	82	48
Rural	25	15

Table 2. Demographic Characteristics (Continuous Variables).

Participant Characteristics	M	SD	Range
Age (Respondent) ^a	37.92	6.15	22 - 65
Current Age (Child) ^a	7.02	2.08	3 - 11
Age of Diagnosis ^b	45.55	22.10	12 - 104
SRS Total Scale Score	81.52	8.89	61 - 90

Note. ^a measured in years ^b measured in months

Data collection procedures

After the initial mailing of the informational packets to targeted families, NDRC Autism Registry staff followed up with letters to nonresponders to ascertain interest/disinterest in the study. Once caregivers expressed interest in participation, the NDRC Autism Registry staff immediately sent a questionnaire package containing the Social Responsiveness Scale (SRS), the investigator-developed measures and the demographic survey (combined into an 8 x 11 survey booklet), and a small cash incentive. Returned questionnaires were tracked via participant-numbers (assigned by the researcher) that linked the questionnaires with the caregiver's response cards.

Predictor variables and measures

Two instruments were developed to measure level of worry/concern about symptoms related to ASD and attributions of initial ASD symptoms. In addition to these two instruments, caregivers completed a demographic questionnaire and the Social Responsiveness Scale (SRS). The measures included in the questionnaire package are described in more detail below.

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Level of worry about autism symptoms measure (LOW; Perryman 2009). The LOW was developed to measure parents' perceptions of their initial concerns about early flags of ASD. The content of the measure was based upon previous studies of early symptoms and behaviors associated with ASD (Baranek, 1999; Osterling & Dawson, 1994; Reznick, Baranek, Reavis, Watson, & Crais., 2007; Wetherby et al., 2004; Zwaigenbaum et al., 2005). The measure consists of eight items that ask parents to gauge, retrospectively, their levels of worry about early ASD red flags in their children's behavior prior to diagnosis. The items inquire about both the absence of typical behaviors and the presence of atypical behaviors related to: (a) object play, (b) response to social interaction and social stimuli, (c) play and engagement, (d) motor movements, (e) joint attention (pointing) behaviors, (f) eye contact and looking behaviors, (g) speech development, and (h) imitation skills. The response format for the measure of initial level of concern is a Likert scale in which 1 = not worried, 2 = somewhat worried, and 3 = very worried.

Attributions of autism symptoms measure (AOAS; Perryman, 2009). The AOAS was developed to measure parents' initial thoughts about the causes of behaviors related to ASD. Parents are asked to respond retrospectively to items concerning early red flag behaviors thought to be associated with a later diagnosis of ASD. The content of the scale was based upon previous research documenting differences in explanations of behaviors (Bussing et al., 1998; Cohen et al., 1998). The items on the instrument ask if parents think behaviors were caused by conditions/reasons such as: (a) another medical condition (hearing loss or brain injury), (b) intentional disobedience or stubbornness, (c) slower but typical development, (d) shyness, (e) uniqueness or personality differences, or (f) spiritual influences. The response categories for initial attributions of behaviors uses a binary-scale format of *yes*, "I thought my child's behavior may have been caused by this condition/trait" and *no*, "I did not think that my child's behavior could have been caused by this condition/trait."

Demographic information. Parents were asked to complete a survey requesting information on family demographics and their diagnostic experiences. The survey includes questions that focused on: (a) caregiver and child racial or ethnic group affiliation; (b) educational level attainment and income (as a measure of SES); and

(c) agency or location where diagnosis of ASD took place (e.g., hospital, Children's Developmental Service Agency, TEACCH clinic).

Social Responsiveness Scale ([SRS]; Constantino, 2005). The SRS is a 65-item rating scale that measures the severity of ASD symptoms as they occur in natural settings (Constantino, 2005). The SRS was normed on a sample of more than 1,600 children and is appropriate for use with children from 4 to 18 years of age. Although the current study included a few 3-year-olds, the majority of the study sample ($n = 158$) was 4 years or older. Pine, Luby, Abbacchi, and Constantino (2006) validated the SRS via its correlations with teacher reports, the Vineland Adaptive Behavior Scale (VABS; Sparrow, Balla, & Cicchetti, 1984) composite score, and the social impairment/adaptive scores on the Autism Diagnostic Interview - Revised (ADI-R; Lord et al., 1994), considered one of the gold standards in establishing a clinical diagnosis of autism. They found the following correlations between the SRS and the above measures: (a) teacher report ($r = 0.785$); VABS ($r = -0.862$); and ADI-R ($r = 0.634$). The current study used the cut-off score of 59 for total scaled score as an inclusion criterion; scores at or above this value indicated deficits in social and communication skills consistent with those associated with ASD according to Constantino et al. (2003).

Analyses

A preliminary step in examining the data for the research aims involved conducting separate factor analyses for the researcher-created AOAS (attributes) measure to establish which subscale/s would be used in group comparisons and the regression analysis. Based upon the factor analysis, the items were grouped into 5 potential subscales. The criteria for retention of a subscale were three or more items with a single factor loading above .40 and a subscale with an alpha above .60. Factor analysis of the AOAS validated one subscale that met all the criteria for retention and thus could be used in further analyses to address the study aims. A total of four items loaded on this "Behavioral Challenges subscale ($\alpha = .72$)," wherein caregivers attributed early symptoms to the possibility that the child: (a) needed more discipline, (b) was being stubborn or disobedient, (c) might be spoiled, and (d) had a difficult personality.

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The LOW measure, conceptualized and designed as a unidimensional measure, also met the criterion for internal consistency ($\alpha=.87$), and was included in subsequent analyses.

Prior to conducting the regression analysis, bivariate Pearson product-moment correlations were conducted to examine the relationships between the predictor variables (AOAS-BC and LOW) and the outcome variable. LOW scores were negatively correlated with age of diagnosis, $r(168) = -.22, p = .004$ (i.e., small to moderate relationship) and AOAS-BC scores were positively correlated with age of diagnosis, $r(168) = .31, p = .000$ (i.e., moderate relationship).

A hierarchical regression model was selected to test the theory that caregiver beliefs and perceptions about initial ASD symptoms may explain a significant amount of variance in age of diagnosis above and beyond variables associated with age of diagnosis of ASD in previous research. Sequential entry of predictor variables into the hierarchical regression model was based upon prior research showing that a child's level of functioning or severity of symptoms (Goin-Kochel et al., 2006; Mandell, et al., 2005), SES (Mandell et al., 2005), and race/ethnicity (Mandell, Listerud, Levy, & Pinto-Martin, 2002) each has a relation with age at diagnosis. Therefore, race/ethnicity, severity, maternal educational levels, and income were entered into the model first because they were identified as covariates related to recognition of symptoms from the previous literature. The predictors of primary interest were: (a) LOW scores and (b) AOAS-BC scores. These variables were entered last because they have never been studied before in relation to age of ASD diagnosis and because the current study was interested in examining their influence above and beyond the covariate variables.

Results

Due to missing information (e.g., pertinent demographic information or scores on instruments, $n = 6$), a total of 162 caregivers' responses were included in the regression analysis. The first block (race/ethnicity) resulted in an $R^2 = .02, F$ change (1, 160) = 3.01, $p = .09$, indicating that race/ethnicity alone did not explain a significant amount of variance in the age of diagnosis. The second block (SRS; Severity) did not result in a significant change in the model, $R^2 = .03, F$ change (1, 159) = 1.48, $p = .23$; thus,

this demographic variable only explained an additional 1% of the variance in age of diagnosis. The third block (maternal education), also was not significant, $R^2 = .03, F$ change (1, 158) = .02, $p = .90$. The addition of income (fourth block), did not explain additional variance in the dependent variable, $R^2 = .03, F$ change (1, 157) = 0, $p = 1.00$. The final block and model with the LOW total score and AOAS-BC subscale score was significant, with $R^2 = .16, F$ change (2, 155) = 12.21, $p < .001$ and adjusted $R^2 = .13$. The results suggest that for this sample, magnitude of concerns and attributions contribute to the variance seen in the age of diagnosis above and beyond race, severity, SES, or geographical location. The R^2 change for the final block is .13, suggesting a moderate effect size. A summary of the final hierarchical regression results is provided in Table 3.

Table 3. Hierarchical Regression Model Predicting Age of Diagnosis of ASD.

Variables	<i>B</i>	<i>SE B</i>	β
Final Model Summary			
Constant	30.946	19.46	
Race/Ethnicity	-4.27	3.97	-.09
SRS total scaled score	.25	.19	.1
Maternal education level	-1.01	1.64	-.05
Income level	-.06	1.18	-.004
Level of Worry	-1.14	.38	-.23*
About ASD symptoms			
Attributions of ASD symptoms: Behavioral Challenges	4.13	1.15	.27**

To further investigate the unique contributions that level of worry and attributions of ASD symptoms to behavior challenges make to age of diagnosis, a simultaneous regression analysis was used. A summary is provided in Table 4. The squared part correlation (partialing out the effect of AOAS-BP) for the LOW measure was .04, which translates to a small effect (Cohen, 1992). The squared part correlation (partialing out the effect of LOW) for the AOAS-BP was .08, which translates to a small to medium effect (Cohen, 1992).

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**Table 4. Parsimonious Multiple Regression
Predicting Age of Diagnosis of ASD.**

Variables	<i>B</i>	<i>SE B</i>	Partial <i>r</i>	<i>R</i> ² Change
Constant	36.46	9.26		
Level of Worry About ASD symptoms	-1.03	.35	-.22*	.04
Attributions of ASD symptoms: Behavioral Challenges	4.46	1.10	.29**	.08

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

Discussion

The purpose of this study was to explore associations between age of diagnosis and caregiver factors above and beyond factors previously explored in the literature (e.g. race, SES, symptom severity). As stated earlier, previous literature has shown associations between race (Mandell, Listerud, Levy, & Pinto-Martin, 2002), SES (Mandell, Listerud, Levy, & Pinto-Martin, 2002; Mandell et al., 2005), and the age of diagnosis of ASD. However, these findings have not been consistent in all cohort studies, including the current study's population, potentially due to variations in data collection and population characteristics (Perryman et al., 2018; Mandell et al., 2005). While it is important to continue to examine the role of demographics in early diagnosis, there may be further insight gained by investigating constructs influenced by differences in demographics, such as attributions, values, and beliefs. The latter are influenced by a variety of factors, including culture.

For this sample, race did not predict the age of diagnosis, nor did a number of other demographic variables (Perryman et al., 2018). However, age of diagnosis had a small relation with the magnitude of caregiver concerns and a small to moderate association with caregiver attributions of early symptoms to behavioral challenges. The regression results showed that the relationship between the above factors and diagnosis of developmental disorders is important to consider, beyond commonly cited barriers to early diagnosis.

Because this study widens our understanding about the preliminary conditions leading up to help-seeking, it has potential value for understanding the conditions influencing early identification of ASD. The current study provides a unique contribution by examining associations between parental concerns or beliefs about initial ASD-related symptoms and age of diagnosis. Although prospective research is needed to confirm that initial perceptions and beliefs about ASD-related behaviors are predictive of the presentation of concerns to health care providers, the current study identifies two candidate variables that may influence the overall referral process.

For instance, previous research has shown that physicians are less likely to refer children for ASD assessment if behaviors are disruptive or appear to be related to behavior challenges (Sices, Feudtner, McLaughlin, Drotar, & Williams, 2004). Parents' interpretations of their children's ASD-related behavior as a "behavior problem" may influence physicians' interpretation of the same behaviors. That is, parents may present concerns in a way that minimizes their complexity (e.g., behaviors are due to personality differences or willfulness). Indeed, Clayman and Wissow (2004) found that a minority of the doctors in their study actively sought to understand the parents by requesting elaboration of the words they used to describe their children's behavior, words that may potentially be "red flags" for developmental difficulties.

In another scenario, attributions of ASD-related behaviors to behavioral challenges may deter parents from expressing concerns to their children's physicians, and result in parents attempting to deal with the behaviors on their own. In such cases, the underlying reasoning and logic can be tied back to the Health Belief Model. If parents attribute behaviors to "controllable origins", they may not view their child as being vulnerable to a developmental disorder or have a sense of associated consequences (i.e., more social interaction difficulties as the child ages). On the other hand, if parents perceive that there is a medical origin for exhibited behaviors and have subsequent higher levels of concern, they may deem that professional help-seeking is beneficial and outweighs any potential barriers to getting answers. In the current study, there was an observed positive relationship between the magnitude of caregiver concern and age of diagnosis. Perhaps higher levels of concern were partly responsible

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for earlier efforts to seek medical advice or services for atypical behaviors.

One limitation of the current study was the use of researcher-created instruments. This was necessary due to the lack of existing tools to examine the constructs of interest in the study. All of these instruments will require further examination and refinement for use in additional studies. The latter would include a study that uses the instruments in a prospective study to examine pre-diagnostic concerns and eventual age of diagnosis in young children showing developmental delays. The second limitation was that the sample was recruited from a research registry of families who had expressed an interest in being involved in research, and thus may not have been fully representative of the general population of parents of children with ASD. Third, although the retrospective methodology provided a feasible inroad to the initial examination of the influences of caregiver interpretation of early ASD symptoms on age of diagnosis, retrospective research has some inherent limitations. For example, without further research, one cannot rule out the alternative explanation that age of diagnosis influenced parent's retrospective views (i.e. recall bias) about their attributions or levels of concern. In addition, determining the exact nature and severity of early autism symptoms for individual children was not possible with a retrospective methodology. We did examine the possibility of parental recall of level of concern was biased by the child's current level of symptom severity, and found that the correlation between the LOW and the SRS scaled score was small ($r=.10$) and nonsignificant ($p=.20$). Given this finding, the severity of current ASD-related symptoms was not a contributor to parents' reported pre-diagnostic levels of concern.

Despite the limitations of this retrospective study, there were several advantages to using a retrospective approach as first step in this line of research. First, prospective studies are expensive, and the present retrospective research provides preliminary evidence supporting the value of investing resources in future research on caregiver factors that predict age of diagnosis of ASD. Second, the retrospective approach provided a means to develop and evaluate new instruments to measure key variables, also essential groundwork for future prospective investigations. In summary, this study, similar to retrospective studies on the earliest symptoms of ASD in infants and toddlers, provides a foundation for

further, hypothesis-driven research in a heretofore under-examined area.

Conclusion

The present study provides new information about the importance of parental concerns and attributions in the quest to identify children at risk for ASD at younger ages. If future studies support a prospective association between the parental attributions and concerns about ASD-related behaviors and age of diagnosis, the findings suggest the need to educate physicians and develop strategies to help families understand developmental milestones so that they can distinguish between intentional versus unintentional difficult behaviors in their children, and be more aware of which behaviors may be indicative of risk for developmental disorders.

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MOVING FROM CONFERENCE PRESENTATIONS TO SCHOLARLY PUBLICATIONS

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ABSTRACT

Conference presentations offer an opportunity for faculty at all ranks to present their research to attentive audiences and receive feedback critical to the presenter's research program. However, for many presenters, conference presentations do not advance beyond the conference itself and ultimately does little to advance the presenter's research agenda. More specifically, many conference presentations do not transition to publications which are critical to career advancement and the promotion and tenure process. In this paper, we examine the issue of advancing conference presentations to publications and highlight factors that may preclude this process and ultimately advancement to senior faculty ranks.

KEY WORDS: research, scholarly publications, presentation to publication pipeline, research cycle

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Introduction

Scholarly publishing is a cornerstone of the academy of higher education alongside teaching and service. Although many in the academy master the art of successful teaching, far fewer develop an ease and love for scholarly publishing process. Unfortunately, this lack of development in scholarly publishing can have substantial negative consequences as the process is linked to the promotion and tenure (P&T) or the acknowledgement of achievement in the academy. Scholarly productivity of academicians is judged very critically during the P&T process, thus scholarly productivity is a must to move successfully through the ranks from Assistant to Full Professor. Worrall (2016) noted that “Becoming a well-published academic is a long and challenging process. It requires hard work and some luck. It can be as infuriating as it can be rewarding. But, the process has to start somewhere and, for many developing academics, it starts with a reworked and revised conference paper eventually getting accepted in a reputable journal”. (p. 3). A key goal of this publication is to assist emerging scholars in understanding the scholarly publishing process and how they relate to critical milestones necessary for progress toward P&T. A secondary goal of this publication is to highlight traditional barriers that faculty from underrepresented groups frequently face and offer solutions to overcome such barriers. It is our hope that achieving the aforementioned goals will assist in the development of the necessary requisite skills and confidence for adequate long-term scholarly productivity.

Conference Presentation or Publication?

The publication process is difficult. For some, it is absolutely frightening and even the thought of engaging in the process can lead to a paralyzing fear of potential rejection. Others are overcome by “writers block”; those times when they just cannot write (Hara, 2010). Ultimately many are so disrupted by this fear that they delay writing and others discontinue manuscript development altogether and move to other less stressful activities. One such example is conference presentations which typically offer a source of encouragement and validation. Conference presentations are associated with immediate and positive feedback from professionals in the same discipline. Such feedback offers young scholars

much needed and vital encouragement and what is believed to be a metric of career success.

Yet, junior scholars must be clear that conference presentations regardless of type (invited, peer-reviewed, etc.) are not equivalent to peer-reviewed publications. The number and size of the audience attendance of conference presentations does not reflect positive research or general career progress. Some even argue that conference presentations have no real impact beyond the conference itself (Nicolson, 2017). In contrast, publications have wider reach and longer lasting impact. This point is underscored by Vardi’s (2009) statement that, “The reviewing process performed by (conference) program committees is done under extreme time and workload pressures, and it does not rise to the level of careful refereeing. Therefore, the rigor of the review does not rise to the level of the peer-reviewed journal and in some conferences the majority if not all submitted papers are accepted. Additionally, conference presenters are provided no feedback regarding their submissions. Consequently, the acceptance of their submission only indicates the submitted project was deemed worthy of presenting at the conference and the individual submitting the project does not gain any real insights from the reviewer and his/her “peer review”. Further, there is some expectation that conference papers will be followed up by journal papers, where careful refereeing will ultimately take place. In truth, only a small fraction of conference papers are followed up by journal papers.” (p. 6). Therefore, junior faculty must beware of the allure of conference presentations when they should be setting their sights on the greater value of publications.

Publications are a key element of the P&T evaluation and ultimately job stability and long-term success in academia. More importantly, conference presentations (local, national or international) do not carry the same weight during the P&T process and for many scholars the lack of publication does not reflect the completion of “real research”. Additionally, a track record of publications relevant to a line of research inquiry is frequently required of those faculty seeking external grant funding from agencies such as the National Institutes of Health or the National Science Foundation. Consequently, junior faculty must understand: a) the need for the proper balance between conference presentations and publications necessary for P&T, b) the weighting of conference presentations and publications for P&T at

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their institutions, c) how the pipeline of conference presentations to publications can be fluidly achieved and d) the cyclical nature of conference presentations, peer-reviewed publications and their relationship to grant activity.

Creating Balance between Conference Presentations and Publications

Striking the correct balance between conference presentation and scholarly publications can be difficult for junior faculty. Many feel the need to attend and present at conferences to “get their name out there” and share their work with a (hopefully) knowledgeable audience. However, conference presentations may conflict with the need to develop a scholarly publication record. It is important to note that conference presentations are critical to the scholarly writing process as they provide opportunities to gain insights and feedback about their research (Bugeja & Wilkins, 2006). Still, they should be viewed only as a critical first step in the development of scholarly research activity and not a substitute for publications when one is seeking P&T (Bugeja & Wilkins, 2006). Some suggest an annual “one-three-one publishing strategy”; one conference presentation, three journal manuscripts and one (research) collaboration (Poindexter as quoted in Bugeja & Wilkins, 2006). Others suggest 2-2-2; two manuscripts in preparation, two manuscripts under review and two manuscripts in press (Furtak, 2016). While the authors of this paper do not necessarily support a specific ratio between conference presentations and publications, we do believe the ratio should be based on a greater number of publications relative to conference presentations in consideration of P&T expectations. Regardless, junior faculty are better served by devoting the time necessary to cultivate a potential manuscript rather than devoting time to multiple conference presentations during the same time frame.

The Pipeline of Conference Presentations to Publications

Despite the focus here on the need for a greater ratio of publications to presentations for P&T decisions, conference presentations do offer an independent contribution to one’s scholarly productivity. Junior faculty should be urged to understand the rationale for conference presentations beyond “getting their names out there” or the positive and immediate feedback the

conference presentations offer. In fact, conference presentations should serve to feed the “pipeline” to publications (Bugeja & Wilkins, 2006). For example, conference presentations can represent an opportunity to receive preliminary evaluations of the rationale, goals, objectives or aims of pilot/early work prior the development of manuscripts (See Figure 1).

Junior faculty must understand that when key research from their research programs/laboratories is presented at conferences it is in their best interested to have a manuscript “in process” (if not completed) and a target journal identified. In some cases, junior faculty should skip conference presentations altogether and move their pilot studies/early work directly to publication (See Figure 1). Such an approach: a) creates a systematic process by which they move their research fluidly from idea to presentation to publication, b) develops an internal timeline for manuscript submission and c) precludes other conference attendees from abstracting key information, methodologies, etc. from the presentation and incorporating them into their research before the presenter has an opportunity to publish the work and receive maximum benefit of their intellectual property. This organized approach also serves to maintain a focus on a systematic and programmatic line of research rather than disjointed conference presentations that do not serve to advance the individual’s research agenda.

Research Cycle: Conference Presentations, Publications and Grants

For those faculty seeking grant funding to support their research, the conference presentation to publication pipeline extends to grant seeking mechanisms and creates a more complete research cycle. Similar to the conference presentation to publication pipeline, the research cycle including grant submissions moves ideas to pilot studies, conference presentation, early publications to support grant submissions, receipt of grants and data driven publications detailing the outcomes of funded research (See Figure 2). The research cycle frequently creates a systematic and programmatic research approach whereby each stage of the cycle builds upon and supports other stages creating a fluid process for conference presentations and publications.

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Figure 1. The conference presentation to publication pipeline.

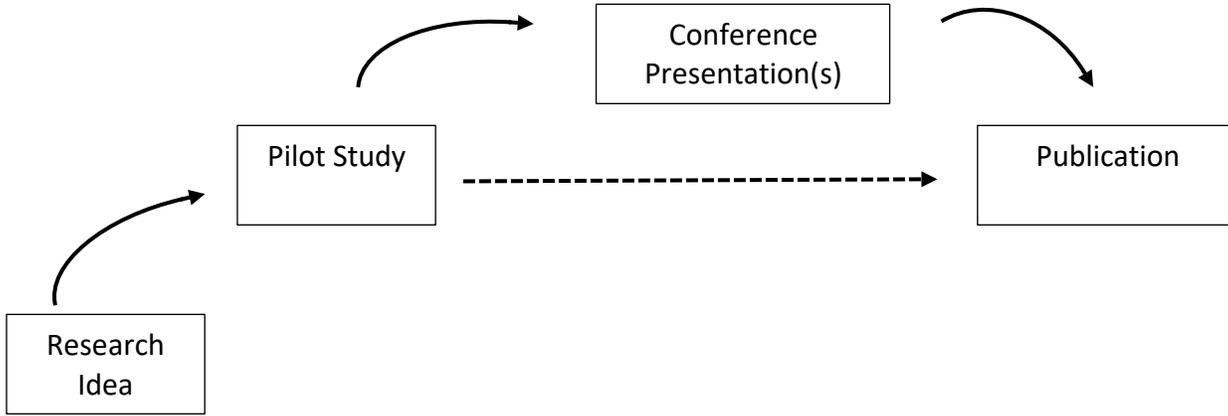
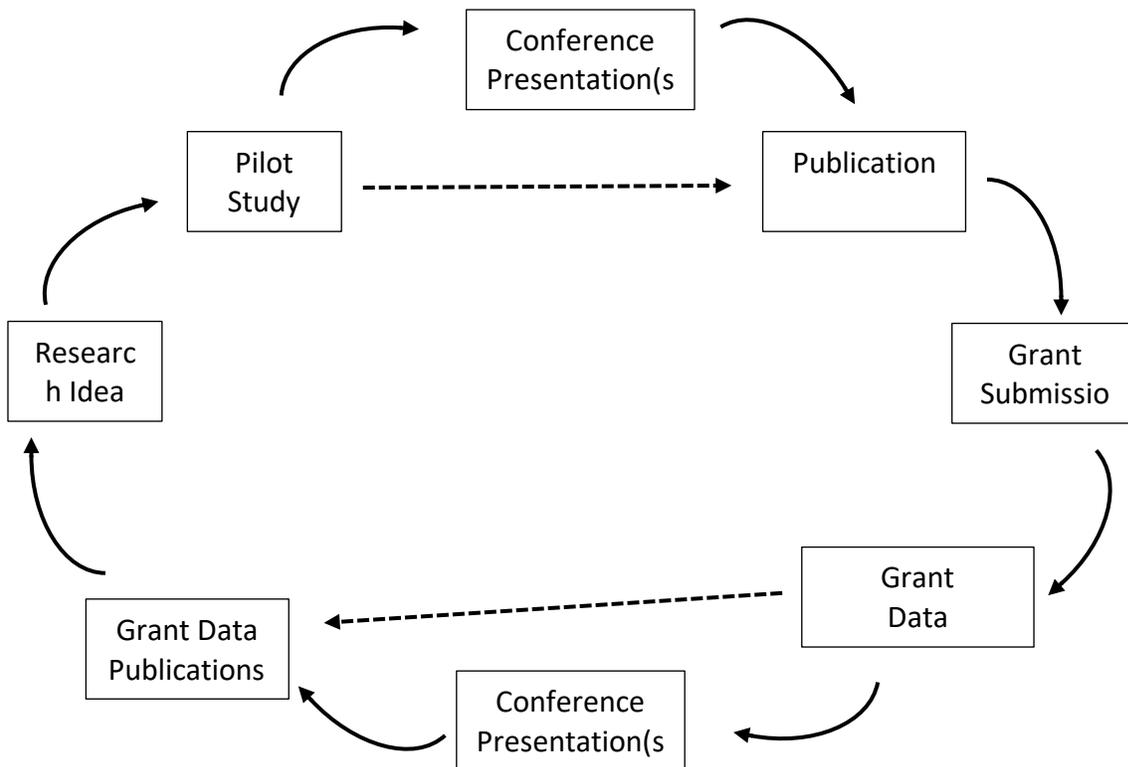


Figure 2. The research cycle: conference presentation to publication to grant to publication.



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Figure 2 represents just one hypothetical cycle although the process can generate conference presentations and publications at any stage. For example, the development of grants includes detailed reviews of the literature to support the rationale for the grant as well as pilot work completed that highlights preliminary findings or demonstrates the feasibility of a methodological approach. Consequently, elements of a grant submission can be translated into publications such as: a) systematic reviews emerging from the literature review, b) pilot studies included in the grant, c) methodological and analytical papers based on novel approaches or d) research protocols. Accordingly, junior faculty engaged in research, seeking funding and fully invested in the research cycle may be less likely to become a “writing stalled professor” (Brown, 2017), given the wide range of potential publications emerging from the systematic and programmatic approach and the research cycle itself.

We offer one word of caution related to the constant recycling of the same research data in the research cycle to potentially stimulate publications. Multiple renditions of the same data at conferences does not move one into a productive research cycle. Junior faculty can be tempted to engage in multiple presentations of the same data (and over several years) resulting in inflated productivity (Sigelman, 2008). This practice ultimately moves the individual further away from the needed number of publications necessary for P&T. Others argue that this practice is in essence “double dipping” which has short term benefits (number of presentations) but ultimately a long list of presentations that are “going nowhere” in terms of publishing potential (Dometrius, 2008). In summary, if conference material cannot be moved to publication, the life cycle of the material has likely ended regardless of how it is received at conferences. These issues should be carefully considered when attempting to move presentations to publications in the research cycle.

Finding Time to Write

Regardless of the organization of a research cycle or the engagement of grant funded research, one must set aside time to write (Slater, 2017). It is not uncommon for faculty and particularly junior faculty to be stalled in the writing process (Jensen, 2017). Yet, according to Jenkins (2015), there are few excuses for not writing including the presence of a heavy teaching load. Jenkins (2015) offers the following strategies: a) commit, which is the first step

to anything worthwhile, b) organize and prioritize to ensure there is time to write, c) schedule time to write, d) be patient with the process and e) repurpose text that has already been written.

Academic faculty must maintain a focus on writing productivity and avoid distractions that can be created by faculty service and other university responsibilities. Regarding service specifically, junior faculty must clearly understand that academic service is essentially unpaid and invisible labor that can easily be utilized to exploit faculty and distract them from their primary responsibilities (Meyers, 2018). Academic faculty, particularly those at the junior ranks, must carefully evaluate each service opportunity to determine the cost-benefit of involvement and how such opportunities are viewed and valued by the P&T committee. Junior faculty are encouraged to seek guidance in the selection of service opportunities especially when presented with service opportunities that are time intensive and those that distract from the publishing process.

Barriers to Publishing: Women and Underrepresented Faculty in the Academy

Despite our attempts to demonstrate both the value and strategy required for successful publishing and scholarly productivity, we recognize there are barriers to certain faculty groups. Many of the barriers exist among the readership of the Journal of the National Black Association of Speech Language and Hearing (JNBASLH). For example, women and underrepresented minorities in the academy are frequently engaged in roles that negatively impact their scholarly productivity and consequently their ability to move through the academic ranks. Specifically, women are less represented as authors, editors and on editorial boards (Balabanove & Lundine, 2018). A recent study showed that women perform far more ‘internal’ service or “academic housekeeping chores” than their male counterparts but such service commitments are likely to their detriment and impact other areas such as teaching and research (Guarino & Borden, 2017). Similarly, some attribute the “minority tax” or the burden of extra responsibilities common among underrepresented minority faculty to lower publication rates and less likelihood of P&T (Rodriguez, Campbell & Pololi, 2015). Rodriguez and colleagues noted the additive burden among minority faculty is associated with the disproportionately greater

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burden of institutional diversity efforts, racism, isolation (which limits opportunities for collaboration and scholarly activity), lack of mentorship and greater clinical responsibilities. Elsewhere, it has been reported that minority faculty are assigned more teaching, advising and excessive committee work than their non-minority peers (Gregory, 2001) which can distract them from writing and publishing. Strategies to improve service inequality among women and minority faculty have yet to clearly emerge to address the current inequity.

As a critical first step, deans and department chairs are encouraged to evaluate the impact of service on women and underrepresented minority faculty. Similarly, both of the latter groups are encouraged to carefully evaluate service commitments and other departmental obligations that preclude a clear focus on the necessary milestones for progression through the academic ranks and P&T. More importantly, both groups are encouraged to evaluate the current literature regarding these inequities and educate themselves on the impact of engaging in service opportunities that positively impact other entities while limiting the progress of the same faculty. Junior faculty especially must understand that their engagement in diversity efforts offer a significant contribution to their institutions however, when P&T evaluations begin, these same efforts can represent “low career value” for their advancement.

But One Must Write

Regardless of departmental teaching and service responsibilities or institution type, faculty must understand that scholarly productivity is required and critical to P&T. Therefore, the establishment of consistent scholarly productivity should be a primary goal. According to Toor (2014), all highly productive writers consistently exhibit similar habits. Among those are, the successful writer rejects the notion of writer’s block. They do not make excuses when writing becomes difficult; they treat writing like a job. Second, the successful writer does not “overtalk” about their projects or their writing. They do not talk about writing more than they write. Third, successful writers believe in themselves and their work. They believe it is their job to be productive.

Fourth, successful writers are passionate about their projects and seek out ways to finish projects. Fifth,

successful writers know what they are good at and find the approach that works best for them. Sixth, successful writers know how to work through the hard parts and how to finish a draft. Seventh, successful writers work on more than one manuscript at once. Eighth, successful writers leave off or stop at a point where it’s easy to start again. They do not stop in the middle of sentences or thoughts. Ninth, successful writers do not let themselves off the hook for not writing, make excuses and make writing a priority. Last, successful writers know there are no shortcuts or magic bullets. Writing is hard, and effort is required to produce good work.

Conclusions

The goal of this publication was to examine the issue of scholarly productivity in the context of conference presentations and career development. Although scholarly productivity in the form of publications is expected among faculty at all ranks, there is evidence that conference presentations are more likely to occur. This imbalance is a major concern given the weight that scholarly productivity is given during the promotion and tenure process. It is our hope that this exploration of the range of issues associated with scholarly publishing can stimulate discussion and identify strategies to move faculty from a higher ratio of conference presentations to scholarly publishing. In the end such change may create the appropriate balance to ensure successful progression through the ranks of the academy.

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