

On differences and deficits: A critique of the theoretical and methodological underpinnings of the word gap

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Abstract

The word gap, or the language gap, can be traced back to Hart and Risley's 1995 seminal work on language practices in high- and low-income families, and it is one of the most widely cited explanations for why children from low-income, minority contexts underperform academically in contrast to their white, middle-income counterparts. Despite its widespread influence on research, education and policy, the word gap has been at the centre of vociferous debates in academic circles over whether the word gap is a deficit in language input for infants that should be attended to or a difference in language practices that should be embraced. In this article, I draw on multiple disciplines to highlight the strengths and shortcomings of word gap findings, and I provide future directions for educators, policymakers and researchers seeking to better understand the language experiences of children growing up in low-income contexts from a cultural and contextual perspective.

Keywords

Language development, literacy, parenting, language ideology, low-income families

Children living in poverty undeniably face many challenges, the effects of which become especially pronounced during entry into formal schooling. Scholars from multiple disciplines have examined how the experiences of children in poverty relate to educational success (Dubow and Ippolito, 1994;

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Izard et al., 2001; Janus and Duku, 2007; Lee and Burkam, 2002; Raver, 2003; Rowe and Goldin-Meadow, 2009; Ryan et al., 2006), and in their pursuits they have discovered that language skills are an important predictor of school readiness (Forget-Dubois et al., 2009; Hirsh-Pasek et al., 2015; Hoff, 2013; Raikes et al., 2006). The word gap, or language gap, is one of the most widely cited explanations for why children growing up in poverty tend to underperform academically in contrast to their wealthier counterparts (Carlo et al., 2004; Hart and Risley, 1995; Hoff-Ginsberg, 1998; Rowe, 2008, 2012; Weisleder and Fernald, 2013). The message is fairly straightforward: there is a gap in the quantity and quality of words spoken by parents to children in low- versus high-income households, which translates in to socioeconomic differences in academic performance. Researchers, educators and policymakers ubiquitously cite the word gap as a rationale for initiatives aiming to ameliorate the effects of poverty on children's development, seeing the word gap as an effort to provide equitable education for impoverished families (see Leffel and Suskind, 2013; Rosenberg, 2013; Suskind and Hoff, 2013; Suskind et al., 2013 for examples).

The word gap finding can be traced back to Betty Hart and Todd Risley's (1995) oft-cited study on socioeconomic differences in U.S. children's everyday language experiences. Hart and Risley spent two and a half years documenting the amount and characteristics of language spoken to children by parents from different socioeconomic backgrounds. In their 268-page write-up, the single and most referenced finding is that children from professional households hear 30 million more words than children from welfare families, a finding that was extrapolated from the data, and not actually observed. Hart and Risley communicate this finding using a line graph in which professional, working-class and welfare families' language input to children is represented with lines that align at children's birth, but diverge by the time children reach four years of age. The obvious implication is that these developmental pathways are set from birth (years before formal schooling begins), are a result of social experiences in the home, and are projected to never converge. Hart and Risley (2003) refer to this disparity in language input as the early catastrophe.

After Hart and Risley's (1995) publication, the 30 million-word gap finding quickly reverberated through the halls of academia, within policy circles and among the broader public. A search for citations for Hart and Risley's book, "Meaningful Differences in the Everyday Experience of Young American Children", yields over 40,000 results on academic search engines. Their seminal finding was quoted on the Common Core website, was the catalyst for government-funded educational initiatives such as *Providence Talks*

(www.providencetalks.org), the Thirty Million Words Initiative (tmw.org) and Too Small to Fail (toosmall.org), and has permeated public awareness via extensive exposure in/on NPR (National Public Radio), the New York Times, The New Yorker, Huffington Post, USA Today, The Atlantic, Washington Post, the BBC, LA Times, CNN and other major news sources. The words “Talk to your baby. Their brain depends on it” paired with images of babies and parents were posted inside NYC subway carriages from 2014 to 2015, as part of a US\$1 million city-sponsored campaign to relay to subway riders the importance of talking to their children. Against the backdrop of the growing income gap in United States, it appears that words directed to infants offer a sort of buffer against the devastating effects of poverty on children’s development.

Despite its widespread acceptance among the public, the word gap is at the centre of a vociferous debate within academic circles. On one side are scholars who posit that the word gap signifies a form of linguistic deprivation: a low amount of parental talk results in low levels of language processing and low rates of vocabulary growth (Fernald and Weisleder, 2015; Hoff, 2013). Thus, encouraging parents to have frequent conversations with their children will foster their children’s language skills, which are foundational to children’s school readiness. In essence, closing the word gap translates in to a type of equity: children living in poverty may have a chance to enter school on as near equal footing to wealthier children who, according to the literature, have long been recipients of rich language input. On the other side are scholars who point to the methodological and theoretical shortcomings of Hart and Risley’s study, as well as the body of work they inspired, suggesting that a focus on the frequency of words obscures a larger understanding of the relation between poverty, language and education. They argue that the word gap perpetuates a culture of poverty that continues to frame low-income families’ linguistic practices within a deficit perspective, insisting that there can be no equal footing if the linguistic practices of the wealthy are consistently privileged over those of the impoverished (Avineri et al., 2015; Dudley-Marling, 2007; Dudley-Marling and Lucas, 2009; Dyson, 2015; Johnson, 2015; Miller and Sperry, 2012). In order to understand what occurs at the nexus of language, education and class, researchers need to consider how language ideologies shape children’s daily interactions with others, in both the home and school. Given that millions of dollars are funnelled into initiatives geared towards providing educational equity to children from diverse backgrounds (e.g. Providence Talks, 30 Million Words, Too Small to Fail), it is in everyone’s interest to ensure that these programmes are built on sound developmental

principles, but also respect the linguistic practices of different communities. The word gap debate is about sorting out exactly how to straddle that fine line.

In this paper, I provide an overview of the historical, theoretical and methodological underpinnings of research on the word gap, starting with its origins in the Hart and Risley study. I then summarize and respond to key critiques leveraged against the word gap literature. I conclude with take-home messages for researchers, policymakers, and educators seeking to address educational disparities.

Historical, theoretical and methodological underpinnings of the word gap

Hart and Risley's research emerged in response to the War on Poverty. The War on Poverty refers to a set of initiatives proposed by President Lyndon Johnson's administration, passed by Congress and implemented by his cabinet in the 1960s. These programmes collectively aimed to improve the education, health, skills, jobs and access to economic resources for families living in poverty in the United States. Johnson's call for a national "War on Poverty" was in line with one of America's most enduring myths: that education could offer low-income families a toolbox of skills with which they can lift themselves out of poverty. Any American citizen, regardless of race, could become the next president. All it takes is hard work, coupled with good schooling. However, education in the U.S. society was, and still is, deeply entrenched in socioeconomic inequities. Despite the desegregation of schools in the 1960s, families living in poverty continued to face barriers to social mobility. Picking themselves up by their bootstraps became difficult to do for low-income families, given society maintained many structures that limited such action in the first place.

Despite the mandate to create inclusive classrooms, schools continued to be segregated by race and class, albeit unofficially (Darling-Hammond, 1998; Kozol and Perluss, 1992). Low-income black students mostly attended urban schools, which were largely underfunded, overcrowded and not properly maintained, had a shortage of qualified teachers and lacked sufficient educational resources to ensure good quality education, as was typically afforded to higher-income white students attending suburban schools (Kozol and Perluss, 1992). Education appeared to fail to be the great equalizer of social class, since low-income students were underperforming academically in comparison to high-income students, and this difference was largely confounded with race. In light of the War on Poverty, researchers sought to examine what factors contributed

to differences in academic performance, and one line of Inquiry was directed toward understanding the daily lives of low-income children, hoping to uncover insights into the social contexts that shaped their academic trajectories. If there were indeed factors that set low-income children on a path that did not prepare them to succeed academically, then interventions would derail children from this path and place them on a different track, one that would lead to educational success and eventually lift them out of poverty.

The birth of the 30 million word gap

In response to this enduring War on Poverty, Hart and Risley (1995) conducted their study with the aim of understanding the nature of intergenerational poverty. They directed their attention towards the language interactions between parents and children in the homes of upper- and middle-class, working-class, and welfare families. A total of 42 families participated in the study: 13 were from upper SES backgrounds (1 black, 12 white), 10 were middle SES (3 black, 7 white), 12 were lower SES (7 black, 6 white) and 6 were on welfare (all black). In their final analyses, Hart and Risley grouped middle and lower SES families together. Families were recruited when their children were from 7 to 9 months old, and they were followed once a month, every single month, for the duration of two and a half years, resulting in 1,318 hours of observations. In the early 90s—particularly within developmental psychology circles—data collection on this scale was exciting, since many researchers commonly limited their observations to one time point in a child’s development, and almost always observed interactions for a short duration of time (usually for less than an hour, most commonly 3–10 minutes).

Hart and Risley’s aim was to observe and audio record “everything” (quotation marks theirs) that went on in the home in relation to the child. Their rationale for not limiting their scope to more specific variables of interest was that they didn’t know beforehand what variables they sought to examine in relation to children’s vocabulary skills, and their exploratory stance would allow them to parse out important variables once the data had been collected (Hart and Risley, 1995). Research assistants visited families and recorded everything that was spoken to the child, all the while attempting to remain as unobtrusive as possible (Hart and Risley, 1995). Research assistants would jot down anecdotal notes of what the child was doing, with whom and where. Hart and Risley note that the jottings were very helpful during the transcription process, since researchers could use them as cues to recall scenarios they observed during their data collection.

Hart and Risley took the records of language spoken in the home to children over the two and a half years of the study and transcribed and coded them for the amount and characteristics of language. To measure the quantity of words spoken to children, Hart and Risley counted the words parents spoke to their children to generate a sum score of total words (word tokens), as well as the total number of different words (word types). From these data, Hart and Risley concluded that there was a word gap between professional, low-income and welfare families. Specifically, they observed that children in welfare families heard on average 616 words per hour; children in low-income/middle-income households heard on average 1,251 words per hour; and children from professional households heard on average 2,153 words per hour. Hart and Risley then used linear extrapolations to approximate what children's vocabulary would be like by the time they turned 4 years of age, based solely on the observations they had collected when children were 1–2 years of age. Their now famous 30 million word gap figure was the result of these computations.

To measure characteristics of language, Hart and Risley mined their data for types of forms and functions of parental talk. In their analyses, they once again found socioeconomic differences in language input:

We saw that in an average hour the professional parents displayed to their children more words and more different words of all kinds, more multiclausal sentences, more past and future verbs, more declaratives, and more questions of all kinds. The professional parents also gave their children more affirmative feedback and responded to them more often each hour they were together. (Hart and Risley, 1995: 123–124)

The language interactions Hart and Risley observed were also used to predict children's school readiness. Twenty-nine out of 42 children were subsequently selected and followed into third grade. Hart and Risley reported that the rate of observed vocabulary growth when children were 3 was related to school performance when children were 9–10 years old, as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) of receptive vocabulary and the Test of Language Development-2: Intermediate (TOLD) (Hart and Risley, 1995).

Research building on the word gap

Hart and Risley weren't the only scholars who found differences in parental language input by class. Hoff-Ginsberg (1991, 1998), Snow et al. (1976),

Rowe (2008, 2012) and Weisleder and Fernald (2013) have all observed socioeconomic differences in parental language to children. Similarly, in her ethnography of 12 families across three economic levels (middle class, working class and families living in poverty), Lareau (2003) found that children from middle-class homes were more likely than children from low-income families to hear a steady stream of speech on an everyday basis, and this speech was higher in quantity, diversity and sentence complexity. Additionally, children from working-class and low-income families in Lareau's study were more likely to hear directives from their parents, an observation that Hart and Risley also made from their sample. The effects of socioeconomic status on language use appear to generalize across ethnic groups, suggesting that this gap is attributed to class, and not necessarily ethnicity (Hoff, 2006).

Researchers observed socioeconomic differences in children's language skills as well. Dollaghan et al. (1999) examined the quantity, characteristics and mean length of utterance of children's talk, and they found that maternal class—as measured by mothers' level of education—was related to children's speech at age 3. Hoff (2003) found SES differences in the growth of children's productive vocabulary at age 2. Arriaga et al. (1998) examined productive vocabulary in children between 18 and 30 months of age and found that 80% of low SES children in their sample scored below the 50th percentile in productive vocabulary (based on a test originally normed on a mid- to high-SES sample). Pan et al. found that 3-year-old low-income children produce 73 different types of words in a 10-minute session in contrast to 84 different types of words produced by upper-class children of the same age (Pan et al., 1993, 2005). Moreover, socioeconomic differences are observed across many domains of language acquisition. For instance, children growing up in low-income households are reported to be behind in contrast to their wealthier counterparts in (1) language processing tasks (Fernald et al., 2013); (2) standardized language assessments that measure grammatical development (Dollaghan et al., 1999; Morisset et al., 1990); (3) complexity of speech (Huttenlocher et al., 2002, 2010; Vasilyeva et al., 2008); (4) coherence and sophistication of narratives (Heath, 1983; Vernon-Feagans et al., 2001); and (5) level of phonological awareness (Bowey, 1995; Lonigan et al., 1998; McDowell et al., 2007). The mean length of utterance of low-income children's speech was estimated to be more than a year behind when compared to norms based on white, middle-income families (Snow, 1999). To many scholars, low levels of parental language input and children's language abilities signal a deficit, one that has important implications for

children's school readiness (Carlo et al., 2004; Fernald and Weisleder, 2015; Hart and Risley, 1995; Hoff-Ginsberg, 1998; Rowe, 2008, 2012; Weisleder and Fernald, 2013).

Theoretical underpinning of the word gap

Why do socioeconomic differences in language use warrant so much attention from researchers, educators and policymakers? To many researchers, the word gap points to a form of linguistic deprivation, the effects of which leave an indelible and irreversible mark on the infant's developing brain. In the first few years of life, infants are in a sensitive period of their development, when their social experiences profoundly shape their cognitive growth (Kuhl et al., 2005; Phillips and Shonkoff, 2000). A sensitive period of development is characterized by a time of heightened plasticity during which important synapses in the brain are formed. The structural development of the brain begins in the womb, continues at a rapid pace throughout infancy and toddlerhood, and then gradually slows down with age (Dekaban and Sadowsky 1978). Although the brain is plastic over the course of one's lifespan—as indicated by the creation of neurons in response to novel experiences—it is difficult to rewire foundational brain structures once they have been solidified in infancy (Greenough et al., 1987; Phillips and Shonkoff, 2000).

How do sensitive periods of development relate to the word gap? The language infants hear in the first few years of life is crucial for protecting the brain from pruning unused synapses, which results in children having difficulty learning later on in their development (Huttenlocher, 2009). The effects of early language input on infants' development have been underscored by prior studies (Fernald et al., 2013; Werker and Tees, 1984). As early as 8 months of age, infants demonstrate a remarkable sensitivity to the statistical distribution of phonemes in their language (Saffran et al., 1996). As little "statisticians", babies are able to parse the continuous stream of linguistic input into phonemes, and do so successfully for many languages. Between 6 and 9 months, however, infants' perceptual abilities shift from being attuned to phonemes in all languages to being sensitive to the sounds of their native language. Consequently, if infants are not exposed to the sounds of a particular language, their ability to distinguish sounds in that language begins to deteriorate early on. However, with linguistic input that is high in frequency and diversity, infants' ability to distinguish speech sounds in their own native language

increases. In this regard, early social experiences are critical for fostering infants' skills (Kuhl, 2004; Kuhl et al., 2005).

Infants' skills, moreover, don't develop independently from one another; rather, abilities in one domain feed into abilities in another, resulting in what researchers refer to as developmental cascades (Masten and Cicchetti, 2010). For instance, exposure to language input improves infants' language processing abilities—as measured by the proportion of time infants' are fixated on a stimulus that is paired with a spoken word—and relates to memory, reasoning, vocabulary and cognitive skills (Fernald et al., 2008; Hurtado et al., 2008), all of which predict academic ability. Similarly, vocabulary size translates into literacy skills (Lonigan et al., 2000), which predict school readiness (Alexander et al., 1997). Within this line of reasoning, early language experiences set infants on a developmental trajectory (see research on Dynamic Systems Theory: Thelen and Smith, 1998), which is the result of a complex interaction between genetic and social influences. The variety of social experiences that infants are exposed to carve particular directions for their developmental trajectories, which are impossible to reverse and difficult to derail once cumulative social experiences during sensitive periods of development have set them in place.

Research on the role of early language experiences in infants' learning aligns with findings from neuroscience, biology, genomics and psychology, which collectively demonstrate that as a result of early experiences, the infant's brain develops important wiring in preparation for surviving—and thriving—in life. Foundations for development of multiple domains (e.g. numeracy, literacy, communication, positive attachment and emotional regulation) are built through the experiences infants have with those who care for them in the early years (Knudsen, 2004; Punhune, 2011). In the context of extreme poverty, infants experience deprivation, since many of these important social experiences are lacking in amount and/or quality. Deprivation in the first few years of life leaves lasting and irreversible footprints on infants' physiology and neural circuitry (Greenough et al., 1987).

Early deprivation justifiably sets off alarms. Researchers, policymakers, educators and the broader public immediately respond with concern upon hearing that somewhere infants' physical needs are being deprived. In fact, there are organizations directing enormous efforts to stop and prevent physical and social deprivation across the globe. The lingering question is whether language input in low-income families should be interpreted as a form of language deprivation to which we must respond with critical urgency (e.g. Fernald and Weisleder, 2015; Hoff, 2013; Suskind, 2015) or as a type of differences that point to larger

methodological and theoretical limitations in the study of language development (e.g. as summarized in Avineri et al., 2015).

Critiques of the word gap

The word gap has been heavily criticized since Hart and Risley's first publication on the topic in 1992, and their subsequent book in 1995 (Avineri et al., 2015; Dudley-Marling, 2007; Dudley-Marling and Lucas, 2009; Dyson, 2015; Johnson, 2015; Miller and Sperry, 2012; Michaels, 2013). The critiques range from polite commentaries, gently pointing out methodological and theoretical issues with research on the word gap, to more caustic rebuttals, arguing that the word gap is another way of "providing the middle-class researcher with yet another stick with which to beat the working-class parent" (Pine, 1992: 247). Many of the critiques are leveraged against Hart and Risley specifically, since the word gap in its current manifestation originates in their 1995 study. Other critiques are directed toward researchers who, in line with Hart and Risley's work, build on the word gap literature and work within Hart and Risley's interpretation of language trajectories. Below, I summarize the main critiques against Hart and Risley's study in particular, and of the word gap literature broadly. I respond to these critiques by offering ways in which researchers can expand their methodological and theoretical toolkit in order to better understand the sources of educational disparities and their relations to parental language practices.

The core of my argument is that research on language practices of low-income parents and their children requires methods that highlight variability of language development within cultural groups and focus on contextual factors that shape children's language interactions. Further, I recommend that researchers on language development place culture at the centre of their studies in order to understand the language practices of different cultural groups on their own terms. A more nuanced body of research on language development will enable scholars, educators and policymakers to understand how inequities in educational opportunities emerge and to offer ecologically valid insights for addressing them.

The word gap perpetuates a deficit perspective

Hart and Risley, using the 30 million word gap figure, succinctly and powerfully communicated their main finding: that there are diverging trajectories of language input by class. This figure was the catalyst for an ongoing debate on

whether socioeconomic differences in language directed to children should be interpreted as deficits in linguistic input or differences to be embraced. Critics of the word gap argue that Hart and Risley, along with researchers building on their work, interpret the language trajectories of low-income children within a deficit perspective (Avineri et al., 2015; Dudley-Marling, 2007; Dudley-Marling and Lucas, 2009; Dyson, 2015; Johnson, 2015; Miller and Sperry, 2012; Michaels, 2013). Deficit thinking situates a disproportionate amount of blame on families living in poverty for not living up to the standards of the middleclass rather than on the ideologies and practices of institutions responsible for the material conditions of families living in poverty. In essence, a deficit perspective places blame on the victim, rather than the system, and attempts to “fix” families rather than policies.

The language practices of families living in poverty have long been targeted as reasons for their struggles in society. Work by Bereiter and Englemann (1966), Bernstein (1971) and Deutsch (1967), to name a few, has associated the language of children from low-income households with limited reasoning ability. This line of research explicitly framed the language of low-income children as being limited and deficient, lacking in quantity and quality in contrast to middle-class, educated families. Critics of the word gap argue that the word gap recalls this “cultural deprivation” theory from the 1960s (Dudley-Marling, 2007; Dudley-Marling and Lucas, 2009). In fact, Hart and Risley at one point even make a sweeping statement—for which they offer no evidence—saying that the children of professional families “simply seemed to know more about everything” (Hart and Risley, 1995: 10).

A focus on strengths—not gaps—is the counterargument to the deficit perspective of the word gap (Avineri et al., 2015). Critics of the deficit perspective point to studies which consistently show that children in low-income, ethnically diverse communities come to school with skills that aren’t captured by the methods and testing developed by and normed on white, middle-class samples (Abrahams, 1962; Gee, 2004; Gilmore, 1986; Goodwin, 1990; Heath, 1983; Jackson and Roberts, 2001; Labov, 1972; Michaels, 1981; Miller, 1986; Miller et al., 2005). For instance, in a study on a lower SES, African-American community, Heath (1983) found that young children told engaging stories, using a variety of poetic devices, sound effects and movement as ways of telling narratives that are not captured by standards that privilege narrative cohesion. Vernon-Feagans et al. (2001) found that low-income African-American children co-constructed their stories with other members of their communities, rather than telling a narrative in a monologue, the latter being privileged by standard assessments.

One of the most vociferous rebuttals came from William Labov, a famous sociolinguist, who demonstrated that the vernacular of African-American communities is a distinct dialect, is characterized by unique grammatical rules, and has as much complexity as standard English (Labov, 1972). Instead of constantly trying to fix children living in poverty, Labov lamented, why are we not fixing institutions (Labov, 1972)?

The word gap perpetuates a culture of poverty perspective

A second major critique of the word gap is that it perpetuates the culture of poverty argument. The culture of poverty argument emerged in the 1960s—in line with Johnson’s War on Poverty initiative—as one of the leading explanations for why low-income children don’t fare well academically (Lewis, 1966, 1998). Oscar Lewis, the anthropologist who coined the term “Culture of Poverty” in his 1959 book *Five Families: Mexican Case Studies in the Culture of Poverty*, argued that systemic forces in society were imposed on people living in poverty, creating conditions for an autonomous subculture of poverty to emerge, a culture in which people were socialized into behaviours and attitudes that perpetuated their inability to escape poverty (Lewis, 1966). Hence, the reason for socioeconomic disparities in educational success is due to something in the culture of families living in poverty, which prevents children from acquiring the “knowledge and ability that are consistently held to be valuable in school” (Bereiter and Engelmann, 1966: 24). To escape this self-perpetuating and self-defeating culture of poverty, the lower class must learn the “hidden rules” of the upper class (Payne, 2005).

The culture of poverty argument makes an appearance in Hart and Risley’s study in both implicit and explicit ways. In seeking out an explanation for the persistence of intergenerational poverty, Hart and Risley implicitly referenced the culture of poverty argument when they write: “a concentrated dose of mainstream culture would be enough to raise intellectual performance of low-income children and lead to success in mainstream schools” (Hart and Risley, 1995: 2–3). At one point, Hart and Risley explicitly draw attention to the culture of poverty as an explanation for children not thriving in school:

...competence as a social problem is still with us. American society still sees many of its children enter school ill-prepared to benefit from education. Too many children drop out of school and follow their parents into unemployment or onto welfare, where they raise their children in a culture of poverty. (Hart and Risley, 1995: 2)

Hart and Risley's interpretation of the word gap between professional and working-class families is tied to cultural differences. In addition to explicitly stating that all children in their study acquired the necessary language skills to participate in interactions in their homes and communities—an almost never cited point—Hart and Risley insisted that adapting to life in a “culture of poverty” places fewer cognitive and linguistic demands on low-income children and socializes them into linguistic practices that will not get them out of poverty. For instance:

The differences we saw between families seemed to reflect cultural priorities parents casually transmit through talking. In the professional families . . . parents seemed to be preparing their children to participate in a culture concerned with symbols and analytic problem solving. . . . In the welfare families, the less amount of talk with its more frequent parent initiated topics, imperatives, and prohibitions suggested a culture concerned with established norms. . . . [Welfare] parents seemed to be preparing their children realistically for the jobs likely to be open to them, jobs in which success and advancement would be determined by attitude [and] how well the children presented themselves. (Hart and Risley, 1995: 133–134)

In their work, Hart and Risley concluded that parents from different socioeconomic backgrounds socialized their children differently through the types of words the parents used. These interpretations of the language practices of low-income families are consistent with the culture of poverty argument, claiming that children living in poverty learn the necessary language skills in order to thrive within low-income contexts, but don't acquire the tools necessary to escape the conditions into which they were socialized.

Researchers who have built on Hart and Risley's work do not reference the culture of poverty argument to explain socioeconomic differences in language input. Rather, they allude to other factors that potentially unpack the relation between poverty and language trajectories, many of which are probably confounded with class. For instance, parents who experience more stress or depression tend to talk less to their children (Breznitz and Sherman, 1987; Lovejoy et al., 2000; Pan et al., 2005). Parents' knowledge of children's development, as measured by the Knowledge of Infant Development Inventory (KIDI; MacPhee, 1981), mediates the relation of socioeconomic status and child-directed speech (Rowe, 2008). Parental language and literacy skills relate to the type of vocabulary parents use with their children (Borduin and Henggeler, 1981; Bornstein et al., 1998; Rowe et al., 2005). Parental

education shapes language input: educated parents have children with greater vocabulary skills and faster vocabulary growth during early childhood than less educated parents (Arriaga et al., 1998; Hoff, 2006; Hoff et al., 2002; Hoff-Ginsberg, 1991; Lawrence and Shipley, 1996; Ninio, 1980). A few studies show that parents from low-income communities feel that they have less control over their children's development than parents from high-income communities (Elder et al., 1995; Luster and Kain, 1987).

Collectively, the fore-mentioned studies point to economic rather than cultural factors that shape children's early language experiences. Although most studies on the word gap no longer use the culture of poverty argument to explain their findings, many examine language practices by placing families on a low- to high-income continuum. The caution needed in interpreting any given behaviour on a continuum is that differences between high- and low-income groups may be exaggerated and polarized when nuanced findings get translated to policy and education contexts. Further, to interpret differences between groups on a single behaviour across a spectrum masks the fact that many differences between groups are qualitative—not quantitative—in nature (Leacock, 1971). An alternative is to develop methods that highlight the variability of language development in children from all socioeconomic backgrounds, to regard linguistic practices of different communities on their own terms, to question the norms that are held as standards for how language development should unfold, and to evaluate the above in light of what the end goal of development is and according to whom.

The word gap masks variability in language learning

When Hart and Risley (1995) wrote about low-income families in their study, they probably referred to African-American families who took part in their research, although in their introduction and conclusion they don't specify whom they refer to when they say low income in a more general sense. In the word gap discourse more broadly, the label "low-income" actually refers to an ethnically, linguistically and racially diverse group (US Census Bureau, 2016). This one label—low income, takes a heterogeneous group and inadvertently homogenizes and essentializes it.

When zooming in on the language development of populations that comprise "low-income communities", we see enormous amounts of variability in children's trajectories of language development, both at the group and individual levels. There are three ways of conceptualizing variability (Escobar and Tamis-Lemonda, 2015): (1) variability at the group level (e.g. differences in

language experiences within any group); (2) variability at the individual level (e.g. fluctuations in language trajectories or input over time that are masked when the “mean” is computed); and (3) variability across *developmental time* (e.g. rates of change in parental input or children’s language growth). All three types of variability take a back seat to Hart and Risley’s focal point on the differences in language trajectories between professional and welfare families. The figure depicting the 30 million word gap difference is the single, most often cited finding from Hart and Risley’s study, despite the fact that they took time to code many other aspects of language such as responsiveness, symbolic emphasis, guidance style, affirmatives, prohibitions, imperatives, types of questions, past-tense words, nouns, initiations and modifiers (Hart and Risley, 1995). And, it is important to reiterate that Hart and Risley didn’t actually observe a 30 million word difference in their data; they extrapolated it.

To dig into these magnified differences even further, it is important to keep in mind who the people in Hart and Risley’s sample were: The professional families in the study were professors, who are not necessarily representative of middle- and high-income populations. Professors have typically gone through 5–10 years of education on top of a 4-year bachelor’s degree, and often an additional two years for a master’s degree. As a result of extensive years of schooling, and the nature of what going through a PhD programme entails, it can be argued that professors develop a unique relation to language that may not generalize to other professions that place families into middle- and high-middle income brackets. Thus, to compare families living on welfare, who typically don’t have education beyond high school, with families working within the ivory tower and who have acquired over a decade of higher education is a comparison that begs for drastic differences that are not representative of the kinds of class comparisons that can be made between low- and high-income families. Further, these differences point to larger questions surrounding whose language and culture are privileged in the context of American schooling.

Lastly, statistical analyses of difference pull for polarized comparisons. Under close examination, however, it may be that studies on socioeconomic differences in language actually find that the standard deviations of the reported means for both groups overlap. That is, there may be low-income children at the upper end of the distribution who receive a similar amount of input as uppermiddle-class children at the lower end of their distribution.

In sum, comparing groups on averages as a methodological approach allows researchers to quantitatively contrast distributions of language input

by socioeconomic status, but it obscures a deeper understanding of how variable language input is within low-income and high-income groups. When researchers peer in to what is considered to be a “homogenous” group of low-income children, they discover that parental language and children’s skills spread across the full range seen in any other sample (Escobar and Tamis-LeMonda, 2015). This point is crucial to keep in mind in order to avoid resorting to essentialist claims about groups of people who, on closer examination, vary substantially in many important factors.

The word gap only privileges quantity of language

The word gap by definition focuses solely on frequency of words directed to children. Words are typically the unit of analysis in studies on child development because they reveal important information about how the brain processes language input. For instance, it is commonplace for many researchers to talk about language as input, going into the system (the child’s brain) in which this input is being processed. This way of referring to language learning can be traced back to information processing theory, which dominates many subfields within developmental psychology (e.g. McLaughlin et al., 1983; Shiffrin and Schneider, 1977). Information processing theory provides a way for researchers to understand how the human mind transforms sensory information. According to this theory, all language input is processed in the brain and mediated by basic processes such as attention, working memory, recognition and retrieval. In order for the infant to become a savvy user of language, he/she requires “rich” language input to enter the system (e.g. language high in quantity and quality). Once the infant receives rich linguistic input, he/she will exhibit faster processing of language input (Fernald et al., 2006), which has a cascading effect on his/her future skills.

An information processing approach, for which frequency of language is an important measure, is very good at mapping out the pathways that sensory input takes when it is being processed in the brain. Additionally, it is very good at describing how attention and memory work together to foster language skills. However, painting a more complete picture of language practices in different ethnic groups requires capturing the complex, social reality of which language is an important facet. Because our use of language is inextricably tied to our culture and context in that we draw upon our knowledge of phonology, semantics, syntax and pragmatics to accomplish a goal in a specific communicate context (Hymes, 1974; Schieffelin and Ochs, 1986),

we need more than sheer frequency of words to understand how early language experiences in the home translate into educational outcomes.

Since the sheer number of words spoken to babies says nothing about what is being said, how or when, researchers in developmental psychology have moved toward studying the characteristics of language input, what is commonly referred to as the quality of language. Functioning as an umbrella term, quality of language in developmental research refers to the semantic (e.g. what words mean), grammatical (how words are strung together to produce sentences), and pragmatic (e.g. when, how and with whom language is used) aspects of language. Language that is high in quality tends to be lexically diverse (e.g. parents use many different types of words), frequent (e.g. parents engage their children in frequent conversations) and responsive (conceptually and temporally aligned with what children are doing and saying within a short time window) (Cartmill et al., 2013; Hirsh-Pasek et al., 2015; Tamis-LeMonda et al., 2001; Tamis-LeMonda and Song, 2013). Researchers find that quality of language matters for infants' development of language (e.g. vocabulary) even more than sheer quantity (Cartmill et al., 2013; Goldin-Meadow et al., 2014; Huttenlocher et al., 2010; Rowe, 2012). (Incidentally, the term "quality of language" is potentially problematic because the word "quality" implies that certain patterns of language across cultural groups are inherently better than others. Given the term "quality" is most commonly used to refer to characteristics of language, I will use it in subsequent paragraphs.)

However, even though current research on the word gap places much more emphasis on the quality of parental language rather than sheer quantity, it still works within a quantitative framework that is biased toward highlighting differences. In many studies, quantity of language is a prerequisite for quality of language; that is, the more parents talk, the more likely their forms of speech will be diverse, and therefore the more likely their child will absorb a variety of words that are beneficial to his/her language development (Hart and Risley, 1995; Weisleder and Fernald, 2013). Thus, if quantity is a proxy for quality, and if low-income parents speak to their children using fewer words, then surely researchers will find that low-income parents provide less quality to their children than high-income parents. A way out of this loop is to reframe the question of language input by expanding the scope of analysis to include different forms of interactions that don't privilege the longstanding assumption that language learning occurs in a dyadic interaction in which parental language and attention are directed solely toward the child. It requires researchers scrapping the low- and high-income continuum

altogether and examining language practices in different groups on their own terms.

The word gap precludes an analysis of culture and context

Language has many purposes, only one of which is to describe phenomena in the world (e.g. Austin, 1975; Cazden et al., 1972; Hymes, 1962; Ochs and Schieffelin, 2001; Rosaldo, 1982; Schieffelin and Ochs, 1986; Tamis-LeMonda and Song, 2013). Words not only refer to things in the world but also do things to the world: words transmit culture, rearrange relations, structure identity and are essential tools for socializing children to become competent members of their societies (Duranti et al., 2011). To capture the many ways in which language is enacted in everyday life, critics of the word gap urge researchers to expand their unit of analysis from words to activities (Garrett and Baquedano-López, 2002) and to examine the language practices of different cultural groups on their own terms (Avineri et al., 2015). The implication of focusing solely on words is that researchers take language out of its social and cultural context.

In their seminal work on language socialization, Bambi Shieffelin and Elinor Ochs (1986) pointed out that most studies published in developmental psychology on language development are capturing language practices of white, middle-income mothers and their children—a population that is over-sampled in developmental research—and reflect culturally organized patterns of language socialization practices in that particular ethnic group rather than universal aspects of human development. Indeed, culture has generally taken a back seat to the study of language acquisition in developmental psychology research. As a result, many key insights into infant language learning rest on implicit assumptions of how language interactions unfold, assumptions that are based on WEIRD populations (Western, Education, Industrialized, Rich and Democratic), and almost exclusively on white middle-income mothers and their children.

One of the longstanding assumptions underlying much of the research in language development is that children learn from directed speech while engaged in joint attention (Tomasello, 1995). In his highly influential work, Tomasello (1995) defined joint attention to include interactions in which children alternate their gaze between adult and object (e.g. parent points to the ball and says “Look! It is a ball!” while the infant alternates his/her gaze between the parent and the ball). Similarly, dyadic interactions (traditionally referred to in developmental research as mainly mother–infant

interactions, as opposed to interactions infants have with their fathers, siblings and other members of the community) have been implicitly assumed to be the optimal conditions under which infants learn. This assumption is partly due to the longstanding use of structured, laboratory tasks that constrict interactions between mothers and infants to predetermined objects, leaving little room for other forms of engagements to occur.

If the parameters of the joint-attention model are slightly expanded, research shows that infants can learn novel referents for objects even when parents aren't explicitly pointing to the objects while simultaneously labelling them (e.g. "This is a Blicket"), but rather indirectly referring to them (e.g. "Would you like to see a Blicket?") (Jaswal and Markman, 2003). Further, infants have been shown to learn from overhead speech in instances when words are not directed to them at all (Akhtar and Tomasello, 1996; Shneidman et al., 2009). Some studies even manipulate one of the basic assumptions of joint attention: sustained attention. For instance, Akhtar and Gernsbacher (2007) found that children could learn novel words despite having their attention diverted away from the person using the word. Notably, infants learned the novel word regardless of whether the word was embedded in a statement ("I'm going to show you a toma") or a directive ("Put the toma down here"), suggesting that infants may attend to novel words regardless of the pragmatic context, as long as the directives have referents ("toma") and not just pronouns ("put it there", "do that").

To push the envelope on established norms surrounding joint attention further, studies that examine language interactions across cultures show that in many communities around the world, observational learning is privileged over the dyadic, joint attention model. For instance, Rogoff et al. (1993) presented Guatemalan and American participants with novel objects such as an embroidery hoop or a clear plastic lidded jar with a doll in it. Cultural differences in the organization of children's attention and participation emerged. In Guatemalan interactions, children and caregivers simultaneously monitored multiple events during adult conversation, whereas American children and caregivers focused on one or two actions at a time. Additionally, Guatemalan children often made only simple attention-seeking gestures before their caregivers noticed and acted on their requests, all the while continuing their conversations with other adults in the room. In contrast, American children made frequent and explicit bids for attention from their caregivers, at which point their caregivers would stop the conversation they were having with other adults and direct their attention exclusively to the child. Whereas the attention of Guatemalan caregivers and children was

distributed, that of American participants was focused on mainly one thing at a time (Rogoff et al., 1993).

Collectively, these studies question long-held assumptions about language development: that learning takes place between the parent and child, sitting together with their attention focused on an object, and all language input by the parent is directed solely to the child. In fact, studies show that dyadic interactions aren't the norm among other cultures: multi-party and overheard speech are important features of the everyday language environments of children in some minority and working-class communities (Heath, 1983; Miller, 1994; Ward, 1971). Despite this evidence, Hart and Risley's study, and other work that examines the language environments of young children across different socioeconomic strata, continues to privilege—be it implicitly or explicitly—the traditional dyadic interaction between mother and child, which is primarily found among white, middle-income communities, neglecting the potential role that other conversational partners play in infants' everyday language experiences. In fact, Hart and Risley explicitly told their participants not to interact with researchers and other people present in the house while data collection was in progress. Although this method may have resulted in a cleaner quantitative comparison of language between high- and low-income families, it might have inadvertently precluded low-income families from expressing forms of interactions that may be more typical for them. If researchers continue to evaluate the linguistic practices of low-income families based on standards developed with white, middle-income parents and their children, then the language practices of low-income families will inevitably manifest as a deficit.

Future directions

Hart and Risley labelled the language of low-income children as a catastrophe, which helped mobilize the research community to examine factors that shape infants' development and contributed to interventions that help to boost children's school-readiness skills. Hart and Risley's 30 million word gap finding, however, overshadowed the complex ways that language, class and education are tied together. My recommendations for future directions for research are outlined below.

If we are to explain why language practices differ by class, and how these differences translate into educational outcomes, we need a thick description (Geertz, 1973) of how poverty relates to language practices, one which entails an explicit acknowledgement of how historic, economic, sociopolitical,

cultural and contextual factors collectively create the conditions from which class differences in words—and academic success—emerge (Dyson, 2015; Ladson-Billings, 2006). Moreover, an explicit acknowledgement of how our knowledge of language development is itself historically situated is critical to take into account in order to move away from outdated positivist assumptions about how we come to know the world.

It is crucial that culture take the centre seat in studies on language development. In order to understand language acquisition trajectories of children, researchers need to shed light on the context of language development by changing the unit of analysis from words to activities, by investing in labour-intensive micro-analysis that highlights contextual layers of naturalistic language interactions in real time, and by interpreting data in light of historically patterned and culturally organized systems of beliefs and practices. Without a nuanced portrayal of language interactions across cultural groups, we risk perpetuating language ideologies that privilege some forms of communication—and therefore some types of individuals—over others, and inadvertently adhere to hierarchies that establish and maintain systems that oppress the very families we seek to help.

We should move away from invoking a deficit discourse in research and in classrooms. “Gaps” and “deficits” are labels that have profound consequences for children’s lived experiences. There is already evidence of educators internalizing deficit thinking in their classrooms, and using the word gap as a justification for employing less sophisticated teaching practices with low-income students (Adair et al., 2017). Further, studies show that teachers lower their expectations for students of colour and experience a reduced sense of responsibility for their learning (Boser et al., 2014; Diamond et al., 2004). The word gap discourse is not challenging racial and socioeconomic inequities in the United States. It is inadvertently fuelling them.

The solutions to addressing educational inequities need to be on a structural level. The word gap debate doesn’t escape the material conditions of our time; rather, it is deeply entrenched in them. Both proponents and critics of the word gap agree that language input in the first few years of life is essential for children’s language development, and that some children from low-income backgrounds start school at a disadvantage in contrast to their wealthier counterparts. The crux of the debate lies in how to interpret these differences in academic achievement and determine what accounts for their existence. What is often left out of the discussion is the way that word gap proponents advance their arguments through an inherently moralizing discourse, casting blame for the lack of school readiness of low-income

children mainly on the actions (or lack thereof) of parents. The focus of the word gap thus is almost exclusively on parents and their language practices, at the expense of understanding the economic and social conditions that have fundamentally contributed to creating educational disparities in the first place.

Lastly, it is essential that we complicate the rhetoric supported by the word gap discourse that draws a neat line from early experiences in the home to those in school. The foundation for infants' skills is absolutely a product of their early experiences in the home, and language is foundational to school readiness skills. However, to assume that interactions in the home pave a straight road toward success in school—and in life—is to neglect myriad other important factors that shape children's academic pathways. Children living in poverty face many challenges that feed into their academic abilities: many live in chaotic conditions in the home, have less access to healthy food, and have limited or no access to adequate healthcare (Evans, 2004). Once in school, many low-income children face institutional barriers to their academic success over which they have little control: under-resourced classrooms, cultural and social biases of educators and staff, and systemic racial and gender disparities in office referrals, suspensions and expulsions (Skiba et al., 2002). Thus, producing tangible and lasting change in the lives of children in poverty requires fundamentally altering the institutions and policies that contribute to the creation and perpetuation of poverty in the first place. What Hart and Risley overlooked is the deeply rooted social and economic inequities that run through the fabric of American society via policies and institutions, which continuously and profoundly limit the opportunities for success of many children growing up in low-income families (Cooc et al., 2012; Milner, 2012). If these institutionalized inequities are not disrupted, covering over the word gap will be a temporary band-aid for deeper disparities created and perpetuated by ideological and structural forces.

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