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A Brief Parent-Focused Intervention to Improve Preschoolers' Conversational Skills and School Readiness

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Preschool children's use of decontextualized language, or talk about abstract topics beyond the here-and-now, is predictive of their kindergarten readiness and is associated with the frequency of parents' own use of decontextualized language. Does a brief, parent-focused intervention conveying the importance of decontextualized language cause parents to increase their use of these conversations, and as a result, their children's? We examined this question by randomly assigning 36 parents of 4-year-old children into a decontextualized language training condition or a no-treatment control condition and used mixed effects modeling to measure change (from baseline) in parent and child decontextualized language at 4 subsequent home mealtimes during the following month ($N = 174$ interactions including the baseline). Compared with the control condition, training condition dyads significantly increased their decontextualized talk and maintained these gains for the month following implementation. Furthermore, trained dyads generalized the program content to increase their use of similarly decontextualized, yet untrained conversations. These results demonstrate that an abstract feature of the input is malleable, and introduces a simple, scalable, and replicable approach to increase a feature of child language known to be foundational for children's school readiness.

Keywords: decontextualized language, conversation, parent–child interaction, school readiness, intervention

Oral language skills at kindergarten entry are among the strongest predictors of children's later academic achievement (Cunningham & Stanovich, 1997; Dickinson & Tabors, 2001; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Durham, Farkas, Hammer, Tomblin, Catts, 2007; Rowe, Raudenbush, & Goldin-Meadow, 2012; Snow, Burns, & Griffin, 1998), in part because these skills lay the foundation for children's participation in academic language (Cummins, 1983; Henrichs, 2010; Snow, 1991, 2010; Snow & Uccelli, 2009). Academic language is considered to be the language of schooling and used in written text and formal educational settings to discuss, for example, decontextualized explanations of scientific concepts, nonpresent people, or past events (e.g., historical figures, distant places or times).

Yet prior to kindergarten entry, children's oral language skills vary considerably (Newport, Gleitman, & Gleitman, 1977; Hart & Risley, 1992, 1995; Hoff, 2003; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Pan, Rowe, Singer, & Snow, 2005), and individual differences in parents' communicative speech input explain variation in these skills over and above demographic factors such as family socioeconomic status (e.g., Duncan, Brooks-Gunn, & Klebanov, 1994; Durham et al., 2007). For preschool-aged children, parents' speech input that contains references to abstract, decontextualized topics is strongly associated with oral language skills at kindergarten entry (Demir, Rowe, Heller, Goldin-Meadow, & Levine, 2015; Dickinson & Tabors, 2001; Rowe, 2012; Snow, 1983, 1991) and later academic language abilities (Uccelli, Demir, Rowe, Levine, & Goldin-Meadow, 2017). Given the importance of this type of input in preparing children for the academic language of school, we designed and implemented a training program for parents to (a) inform them about the types of conversations that are known to promote their preschooler's oral language skills and school readiness, (b) encourage them to engage their children in these types of conversations regularly during meal times, and (c) ultimately increase children's experience with challenging oral conversations to promote their language skills and prepare them for kindergarten.

Parent–Child Conversation: A Foundation for Academic Language

We chose parent–child conversation as a point of intervention because it is an experience that occurs in all homes with preschool children but varies considerably in frequency and content. Social

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interactionist theories of language development emphasize that children's language skills do not develop in isolation, nor does adult input on its own foster language skills (Bruner, 1982; Vygotsky, 1978). Instead, children's language develops as a result of rich, engaging interactions with more knowledgeable adults such as parents. For instance, parents who simply produce more child-directed speech with children have children with stronger oral language skills (Hart & Risley, 1995; Hoff, 2003; Huttenlocher et al., 1991). Yet a growing body of work indicates that there are particular features of conversation that better predict child language development over and above sheer input quantity, at least after age two (e.g., Cartmill et al., 2013; Hirsh-Pasek et al., 2015; Hoff, 2003, 2006; Rowe, 2012; Rowe, Leech, & Cabrera, 2017). During the preschool years, conversations that challenge the child to discuss the nonpresent or answer open-ended questions are particularly useful for promoting language skills (e.g., Demir et al., 2015; Rowe, 2012, 2013; Uccelli et al., 2017) Therefore, the focus of our study was on increasing conversations that include decontextualized language (Snow, 1983, 1991).

We define decontextualized language as temporally abstract conversations of past or future events or semantically abstract conversations surrounding explanations about concepts or phenomena (Dickinson & Tabors, 2001; Rowe, 2012, 2013; Snow, 1983, 1990). Other definitions of decontextualized language consider additional conversational topics about the nonpresent, such as extended discourse during book reading (e.g., connections between the child's life and the text) or episodes of pretense (Katz, 2001). Decontextualized language is considered to be an important foundation for academic language because like academic language, it contains more abstract topics and syntactically complex utterances than contextualized conversation that is grounded in the present context (e.g., labeling foods while eating dinner, pointing to illustrations while reading; Curenton & Justice, 2004; Demir et al., 2015; Dickinson & Tabors, 2001). Parent input to children under age two can include elements of decontextualized language such as talk about absent objects or people, but it is relatively rare (Sachs, 1983). Decontextualized conversation about nonpresent events and explanations about unobservable processes typically emerges in more extended and sophisticated forms after children's second birthday (Demir et al., 2015; Rowe, 2012).

Even so, decontextualized conversation makes up a relatively small proportion of overall parent–child conversation during the preschool years with estimates ranging from seven to 30% of parent talk (Demir et al., 2015; Dickinson & Tabors, 2001; Rowe, 2012). The frequency with which it occurs depends in part on the context, occurring most frequently during mealtimes (Aukrust & Snow, 1998; Beals, 2001; Beals & DeTemple, 1993), and the age of the child, with parents using more decontextualized talk as children approach kindergarten age (Rowe, 2012). Despite its infrequency, children who are exposed to more decontextualized language use more decontextualized language themselves (Dickinson & Tabors, 2001), and are found to have larger vocabulary, narrative, and syntactic skills between the ages of three and five (Demir et al., 2015; Rowe, 2012; Tabors, Roach, & Snow, 2001). The effects of participating in frequent decontextualized conversation appear to be even more far-reaching than what is captured by measures at kindergarten entry: the proportion of 30-month-old children's talk that is decontextualized positively predicts a standardized measure of their academic language in seventh grade, even after controlling for family socioeconomic status, parent use of decontextualized language, and children's vocabulary ability at kindergarten entry (Uccelli et al., 2017).

It has been argued that decontextualized talk is predictive of these outcomes because it is lexically and syntactically complex (Curenton & Justice, 2004; Demir et al., 2015) and exposes children to models of academic language they will come to use in formal schooling such as cause-and-effect explanations and narrative structure (Peterson & McCabe, 1992; Uccelli, Hemphill, Pan, & Snow, 2005). Thus, the strong positive associations between these conversations and children's language skills and later academic language proficiency reveal a promising point of intervention to increase children's school readiness before they enter kindergarten.

The Value of Brief Parental Interventions

Most of the work examining associations between parent and child decontextualized talk is correlational, despite the causal conclusions often argued from this work. Recent work has called for an increase in intervention research during early childhood (e.g., Hirsh-Pasek et al., 2015) to ensure that children begin kindergarten equipped with the oral language skills needed to navigate challenges associated with academic language in the classroom. One approach, adopted in this study, is to intervene around specific aspects of parents' language input and measure whether these changes correspond to changes in children's language use. Although there is relatively little research in this area, the work that has been done suggests that brief interventions can successfully change parent communicative input such as parents' gesture with 1-year-old children (Matthews, Behne, Lieven, & Tomasello, 2012), mothers' quantity of speech to 2-year-old children, (Suskind et al., 2016), and questions and comments about illustrations and print during book reading (see Mol, Bus, de Jong, & Smeets, 2008 for meta-analysis).

There have been even fewer attempts to specifically increase parents' decontextualized conversation, as the above examples focus on relatively contextualized aspects of the input. With the exception of Morgan and Goldstein's (2004) pilot intervention with five families to increase decontextualized talk during shared book reading, most work on experimental decontextualized language interventions has focused on increasing parent–child conversation about shared past events, known as elaborative reminiscing (Boland, Haden, & Ornstein, 2003; Peterson et al., 1999; Reese & Newcombe, 2007; Reese, Leyva, Sparks, & Grolnick, 2010). These studies indicate that parents are able to increase the number of evaluative devices used while discussing shared past events, such as the use of open-ended questions, expansions (e.g., tell me more about that), and back-channeling (i.e., clarification requests such as huh?). Critically, increasing parents' elaborative reminiscing also leads children to increase their own use of evaluative devices and measures of productive language such as narrative and vocabulary skills.

The success of the elaborative reminiscing work begs the question of whether training parents to increase their decontextualized language more broadly—including not only past talk but also talk about future events, explanations, and open-ended questions—would lead to increases in their use of these conversations as well as their children's. Furthermore, several of the extant parent train-

ing programs involve multiple training sessions, decreasing the potential for the intervention to be implemented outside of structured experimental contexts and scaled up (Morgan & Goldstein, 2004; Peterson, Jesso, & McCabe, 1999; Reese & Newcombe, 2007). Thus, we sought to determine whether the dosage of these interventions could be decreased while still yielding improvements in parent–child decontextualized speech.

Increasing Parent Knowledge and Efficacy as Mechanisms of Change

We built on the past experimental work by incorporating an explicit theory of change, and reasoned that by doing this, we could decrease the training dosage, yield similar training effects to past work, and importantly, produce an intervention approach that is scalable and replicable. If we want parents—and therefore children—to sustain the gains in decontextualized language they made after study participation ends, then the training must include the motivation to do so. To this end, we integrated an explicit theory of change into our training approach, hypothesizing that (a) increasing parents' knowledge of why decontextualized language is important, and (b) increasing self-efficacy will lead parents to increase their decontextualized conversation with children.

Existing literature has pointed to variations in parent knowledge as a potential explanation for why parents communicate differently with their children. On average, parents who are more knowledgeable about aspects of child development communicate in ways that researchers, pediatricians, and practitioners argue are most conducive for child language development (Garrett-Peters et al., 2008; Miller, 1998; Rowe, 2008). This work raises the possibility that increasing parents' knowledge about why decontextualized language is important for preschool-aged children may be a catalyst in increasing parents' own use of decontextualized conversation. There is evidence to support this prediction from a recent study designed to increase the quantity of child-directed speech to 18- to 36-month-old children (Suskind et al., 2016). Parents took part in one-on-one training sessions with a researcher, which focused on increasing knowledge and beliefs about parents' role in children's language development. Parents who received the intervention increased the quantity and diversity of words addressed to their children, which the authors attributed to an increased understanding about why child-directed speech is helpful for child language development. Suskind and colleagues' (2016) work is innovative because not only did it build parents' knowledge, it also increased parents' efficacy beliefs that they play an important role in their child's language development. The training also included messages such as "Your talk is what grows your baby's brain," which led parents to feel an increased sense of empowerment that how they interact with their children plays makes a difference in their baby's language development.

This theory of change has been used successfully in interventions in domains outside of parent–child conversation, such as those that aim to increase academic achievement or reduce undesirable behaviors such as bullying (Blackwell, Trzesniewski, & Dweck, 2007; Paunesku et al., 2015; Walton & Cohen, 2011). These interventions are thought to be effective because the targeted change (e.g., increasing achievement outcomes) is driven by changing the belief systems that motivate or underlie these behaviors. We adopted this framework and designed a training program to influence how parents think about daily conversations with their children in the context of school readiness, a topic we predicted to be particularly motivating for parents of preschool-aged children.

We argue that this theory of change would predict that increasing parents' knowledge and efficacy should not only increase a specific set of decontextualized conversations covered during training, but also generalize to conceptually similar but untrained decontextualized conversations. That is, if parents come to understand the concept of decontextualized language and the important role that these conversations play in their child's development, they may also increase in other types of decontextualized language (e.g., connections between the present and nonpresent, discussions of routines or schemas, references to individuals who are absent from the present context, counterfactual talk) that were not specifically targeted in the training program.

Current Study

The present study is a test of the feasibility of a simple, and potentially scalable approach to use parents as a way to increase children's decontextualized language, a feature of parent–child conversation shown to predict readiness for academic language starting in kindergarten. We designed a training program to determine the viability of this approach and implemented it using a sample of educated parents and their 4-year-old children. We reasoned that 4-year-old children have some experience participating in decontextualized conversation, but still find this abstract discourse challenging and would thus benefit from opportunities to engage in abstract discourse in the context of parental scaffolding. The content of the program, while brief, introduced parents to a term we developed, *R.E.A.D.Y. talk*, which is defined as a broad style of conversation that helps children get ready for kindergarten. We designed R.E.A.D.Y. talk to be an acronym in order to provide parents with four examples of decontextualized conversation in an easily remembered framework (*R*ecall past events, *E*xplain new words and concepts, *A*sk lots of questions, *D*iscuss the future) and a message to increase efficacy and motivate parents to incorporate these conversations into their daily interactions with their children (*Y*ou can make a difference in your child's academic success).

We predicted that increasing parents' knowledge of the powerful role of decontextualized conversation and the role that their conversations play for their child's kindergarten readiness would lead to a shift from contextualized (grounded in the here-and-now) to more decontextualized conversational content. Moreover, we predicted that increasing parents' decontextualized talk would also lead to increases in children's use of decontextualized talk given the consistent associations between parent and child features speech (e.g., Hoff, 2006). To test these hypotheses, we collected baseline measures of dyads' use of decontextualized talk, randomly assigned one half of the parents to receive a brief training about R.E.A.D.Y. talk and then measured change in parent–child use of decontextualized language during four recorded home mealtimes. Asking parents to record interactions at home allowed us to determine whether dyads could successfully generalize the training content outside of the laboratory. Our specific research questions were:

1. Does a parent training program increase how much parents use decontextualized language with their children?

2. If so, does training parents to increase their decontextualized language lead children to use more decontextualized language themselves?

3. Did parents and children increase only the trained types of decontextualized talk, or did these effects generalize to other features of the input?

Method

Participants

Thirty-seven parent–child dyads were recruited to participate in the present study. Of the initial sample, one family dropped out after the baseline laboratory visit because they did not speak English at home (see below), resulting in a sample of 36 families for analysis. The dyads were recruited through direct mailings, advertisements placed in public spaces, parenting magazines, and on social media sites in the surrounding areas of a large city in the Northeast United States. Interested parents were screened to ensure they met the following inclusionary criteria: the target child was between 4 and 5 years old, the child had no known developmental or language delays, and the child heard English as their primary language at home. The final sample was comprised of mainly mothers ($n = 32$) and the majority of parents (96%) had a 4-year college degree. Thirty-three of the parents were White, two were Asian, and one was mixed race. Children were on average 4 years, 4 months old (18 girls, 18 boys). The majority of children in the sample were first-born ($n = 31$) and had at least one sibling ($n = 32$). As reported by the parent, children spent an average of 22.45 hours per week in the care of some adult other than the target parent.

Procedure

The study was approved by the Harvard University Institutional Review Board (IRB14-3072, *Decontextualized Language*). The procedure consisted of five measurements of parent–child conversation over a 1-month period: a first baseline measure occurred during a visit to the laboratory, and the remaining four measurements took place in the home during mealtimes. To preserve the manipulation effect, all families were initially told the purpose of the study was to understand more about the benefits of family mealtimes.

Baseline. Parent–child dyads first visited the laboratory for a 40- to 60-min visit. Dyads were invited to participate in a 10-min videotaped interaction, during which they had a snack and were instructed to interact as they typically would at home. This interaction provided the baseline measures of parent and child decontextualized language. The researcher then administered oral language and cognitive measures to the children including a brief narrative task, elicited definitions of common nouns, theory of mind, and a measure of planning. The data from these tasks are not discussed in the current article; however, there were no condition differences in children's performance on these tasks. Next, half of the families were randomly assigned to a no-treatment control condition ($n = 18$) and the other half to a decontextualized language training condition ($n = 18$). The control condition did not receive any treatment and continued to believe the study concerned the benefits of family mealtimes. The composition of the groups did not differ significantly on any of the following demographic variables: child age, parental years of education, child firstborn status, or number of family members living in the home ($ps > .05$).

Decontextualized language training. After the baseline parent–child interaction, parents assigned to the training condition received the 20-min training program whereas the control parents did not receive this information. The program involved a brief, verbal introduction to decontextualized language by the researcher, a video describing decontextualized language created specifically for this study, and a follow up conversation between the parent and researcher. To remain consistent with original study goals and extant research on use of decontextualized language, we told parents that one benefit of mealtimes is the conversation that occurs, especially conversation that prepares children for language used in the kindergarten classroom (Beals, 2001; Snow & Beals, 2006). We provided this information in parent-friendly language, using an approach—R.E.A.D.Y. talk—developed for the current study to help parents remember the importance of these conversations and their role in the process (recall past events with your child; explain unfamiliar concepts and words; ask questions; discuss future events; you can make a difference in your child's future academic success: talk is a great way to prepare your child for kindergarten). The first four letters in R.E.A.D.Y. each stood for a type of decontextualized language taken from previous research that has demonstrated which types of decontextualized input most influence children's oral language development and most likely occur at mealtimes (Dickinson & Tabors, 2001). The final letter, *Y*, communicated to parents that their conversations are important in helping build children's language skills and school readiness.

After the experimenter introduction, parents watched a 15-min video, which first introduced parents to the broader concept of decontextualized language, and then provided information about why it helps grow children's language skills. The video then introduced parents to the concept of R.E.A.D.Y. talk by showing video examples of parents and children using each type of decontextualized talk recorded during study piloting (e.g., for *R*, recalling past events was introduced, and then a clip of a parent recalling a past event with her child was shown). The final portion of the video involved providing additional information regarding the importance of decontextualized language (i.e., the You in R.E.A.D.Y.). After watching the video, the parent and researcher had a short, semistructured conversation regarding the main points of the video. The parent was asked if he or she had any questions and then asked to briefly summarize the video. Parents were given a copy of the video and a booklet summarizing the video's main points and were then encouraged to use R.E.A.D.Y. talk as much as possible over the next month.

Home mealtime recordings. At the end of the first laboratory visit, parents in both conditions were given an audio-recorder and asked to record four weekly mealtimes at home. Both conditions received identical instructions for the home mealtime recordings. We chose this context because decontextualized talk is more likely to occur during mealtimes than during other contexts such as book reading or play time (e.g., Aukrust & Snow, 1998; Beals, 2001), but that contextualized talk—such as conversation about the food or ongoing context—is also felicitous. All family members were allowed to participate in the conversation as long as the target parent and child were present. This decision was made to make the

meals as representative to their everyday interactions as possible. Parents could also choose any meal (e.g., breakfast, lunch, or dinner) in order to give parents flexibility and encourage them to complete all recordings rather than skip a week if they became busy or forgot on the scheduled recording day or time.

Parents in both groups were contacted via text message once a week during the month-long period following the laboratory visit (approximately 5 days after their first visit and weekly thereafter). For parents in the training condition this contact served (a) to encourage them to continue using R.E.A.D.Y. talk, (b) to remind them to record their mealtime conversations, and (c) ask if they have any questions about R.E.A.D.Y. talk or recording. For parents in the control condition, this contact was a reminder to record their mealtime conversations and address any recording-related issues. A standardized script was used to ensure that parents received approximately the same amount and type of contact.

Corpus for Analysis

The five recordings (the laboratory baseline and four home mealtimes) nested within each of the 36 dyads yielded a possible 180 recordings. After accounting for missing data ($n = 6$ recordings), the analyses were conducted on a corpus of 174 usable recordings. Each recording was reliably transcribed using the CHAT conventions in the CHILDES system (MacWhinney, 2000). Recordings were transcribed verbatim at the level of the utterance, which was defined as verbal utterance bounded by grammatical closure, terminal intonation contour or a pause by the speaker. Participating families were asked to only record 10 min of their meal, and any longer mealtime recordings were truncated at the first 10 min to ensure consistency and comparability for analysis. Following transcription, a second trained research assistant verified each transcript for accuracy.

Decontextualized Language Coding

Trained decontextualized language. Parent and child utterances were coded as trained decontextualized language if they fell under the four types of R.E.A.D.Y. talk covered in the training video. Specifically, the target parent and child's utterances that involve topics removed from the here-and-now were marked and categorized based on (a) past events, (b) explanations and definitions, (c) future events, and (d) open-ended questions (see Table 1). As the training video focused on the role of open-ended questions in promoting parent–child decontextualized conversation (*A*, ask questions), only open-ended questions that occurred during past, future, and explanatory utterances were marked (e.g., "What happened last week at the zoo?" but not "What type of vegetable is that?" when referring to food in front of the child). Thus, for a question to be coded, it needed to be categorized as both open-ended and decontextualized. Previous research has found that open-ended questions framed with *wh-* (who, what, when where, why, how) encourage children to respond with longer utterances and therefore are thought to encourage back-and-forth conversation (Rowe et al., 2017).

To determine whether an utterance should be coded as trained decontextualized language, the coder determined whether the specific utterance encouraged temporal or semantic displacement, that is whether it encouraged the speaker to step out of his or her present self (e.g., future talk such as discussing an upcoming vacation) or to use language in a way to convey an abstract phenomenon or concept (e.g., explaining why a storm caused the electricity to go out). These rules fell in line with previous work that has operationalized decontextualized talk in these ways (e.g., Cummins, 1983; Snow, 1983, 1991) and were consistent with how decontextualized language was explained in the training video. The coding scheme was designed such that each utterance was to receive only one code (with the exception of open-ended questions). For .02% of the utterances (57 out of 35,588 total parent and child utterances), the coder was unable to select only one code, and instead coded the utterance with two codes (e.g., a past and explanatory code). We chose to keep these double-coded utterances, as they occurred so infrequently and would likely not impact the results.

Untrained decontextualized language. To determine whether trained dyads generalized the training content to conceptually similar conversational topics, we created a second category of codes termed *untrained decontextualized language*. Like trained decontextualized talk, untrained decontextualized talk was defined as talk that encouraged temporal or semantic displacement, but critically, was not discussed as an example of decontextualized language during the training program. Untrained decontextualized language categories were identified based on previous research and examination of the transcripts, and defined as talk about scripts and routines (e.g., "What do we normally do on Tuesdays?"), connections between the present and nonpresent (e.g., "That picture looks like the one we have at home"), and other nonpresent talk (e.g., pretend talk, talk about letters/sounds, generic language, and hypothetical scenarios). Utterances were either given a trained or untrained code, never both.

Contextualized language. The remaining parent and child utterances that did not receive a trained or untrained code were

Table 1
Coding Scheme to Categorize Trained Decontextualized Utterances According to the R.E.A.D.Y. Conversational Categories

Category and definition	Example
Past events: Any utterance that refers to a specific event that occurred in the past, prior to the present context.	You guys were sledding so fast. You gave that shirt to me last Fathers' Day.
Explanations + Definitions: Talk that requests or makes logical connections between objects, events, concepts, or conclusions.	Today daddy's not going to work because it's a holiday. She can't have chocolate because she's a little baby.
Future events: Any utterance that refers to a future event that will or might occur after the present context.	I wonder who the parent helper's gonna be today at school. You're gonna turn five in May of this year.
Open-ended questions: Questions framed with who, what, when, where, why, or how that occur within the above three categories.	And then *what* did we do with the stuffed animals that everyone brought? *Why* you gonna have lunch with Candace?

categorized as *contextualized language*. These utterances referred to talk that was about events grounded the here-and-now, static qualities of the context (e.g., "That is mushy" and "What is that loud noise?"), commands, or management talk (e.g., "Sit down" or "Pass the broccoli"), and filler pauses (e.g., "um" or "eh"). Thus, the sum of the trained, untrained, and contextualized language codes reflected all spoken utterances by a speaker.

Reliability

Two individuals were trained to code the transcripts based on the trained and untrained categories described above. One coder was blind to condition assignment. The two coders initially coded 15% of the transcripts separately and percent agreement was 80% with a mean Cohen's kappa of .72. The condition-blind coder then coded the remaining transcripts.

Measures

The total number of trained decontextualized, untrained decontextualized, and contextualized language utterances were computed for the parent and child at baseline and each of the four mealtimes. To control for differences in the number of total utterances produced by speakers, proportion measures were created by dividing each of the measures (trained, untrained, and contextualized language utterances) by the total number of utterances. Proportions offer the benefit of equating speakers' utterances such that one can compare proportions both within speakers (e.g., Meal 1 to Meal 4) as well as across speakers. Thus in the Results section, we refer to the raw number of trained decontextualized utterances as (DL), and the proportion of total utterances categorized as trained decontextualized language as PROPDL.

Results

Descriptive statistics of parent and child use of DL at baseline were first conducted to describe the naturally occurring variation with which parents and children engage in these types of conversations prior to intervention, and to ensure there were no differences between conditions prior to random assignment. Next, we addressed the three research questions of interest: (1) whether the training program led to an increase in parents' PROPDL, (2) whether training parents led to increases in children's PROPDL, and (3), whether dyads in the training condition generalized the training content to untrained forms of decontextualized talk, resulting in a shift in the overall composition of mealtime conversation from talk that was primarily contextualized to talk that was primarily decontextualized.

Descriptive Analyses

As shown in Table 2 there was substantial variability in parent–child DL conversation, similar to previous work on this topic (Dickinson & Tabors, 2001; Rowe, 2012). On average, parents produced 19.37 decontextualized utterances during the 10-min baseline (SD = 17.04; range = 0–54) out of a total of 128.66 utterances (SD = 29.72; range = 77–195). DL, therefore, comprised approximately 15.3% of parents' total talk (SD = 0.14; range = .00–0.48). At baseline, there were average differences between parents' use of the four types of R.E.A.D.Y. talk, $F(3, 32) = 6.29$, $p = .002$, $\eta^2 = .16$. The majority of parents' R.E.A.D.Y. utterances were about the past (M = 10.23, SD = 12.34), followed by explanations (M = 5.20, SD = 5.80), future (M = 3.94, SD = 8.35), and open-ended questions (M = 2.80, SD = 4.19).

The right portion of Table 2 presents children's DL at each time point, and indicates children used approximately six decontextualized utterances during the interaction (SD = 8.86; range = 0–46), resulting in approximately 12% of their total talk coded as decontextualized (M = 0.12, SD = 0.15; range = .00–0.67). Furthermore, children did not use each type of R.E.A.D.Y. talk with equal frequency, $F(3, 32) = 7.78$, $p = .002$, $\eta^2 = .19$. Talk about past events comprised the majority of children's DL talk (M = 3.66, SD = 5.84). Explanatory talk (M = 1.69, SD = 2.68), future talk (M = 1.11, SD = 2.41), and open-ended questions (M = 0.31, SD = 0.72) were used less frequently. Given the similar patterns of parent and child talk, it is not surprising that parent PROPDL was strongly and positively correlated child PROPDL ($r = .75$, $p < .001$). This finding strengthened our hypothesis that increasing the decontextualization of parent talk should yield comparable increases in children's talk.

Finally, we confirmed our random assignment procedure such that there were no significant condition differences in relevant language production measures at baseline. Parents' PROPDL did not significantly differ between conditions at baseline, $t(33) = -1.12$, $p = .27$; the same pattern was found when considering raw number of DL utterances, $t(33) = -1.45$, $p = .15$, For children, there were no significant differences in these measures at baseline, (PROPDL: $t[33] = 0.12$, $p = .91$; Raw DL: $t[33] = .07$, $p = .95$). Moreover, overall talkativeness did not vary by condition. Parents in the control group (M = 125.22, SD = 32.35) used approximately the same

Table 2
Means (Standard Deviations in Parentheses) of Proportion of Parent and Child Utterances Coded as Decontextualized at Each Time Point

		Parents				Children			
Time	Dyad (n)	Total sample	Control	Training	p	Total sample	Control	Training	p
Baseline	35	.15 (.14)	.13 (.15)	.18 (.13)	.27	.12 (.15)	.12 (.18)	.12 (.11)	.91
Meal 1	35	.34 (.21)	.26 (.22)	.42 (.18)	.03	.36 (.22)	.30 (.25)	.42 (.18)	.11
Meal 2	35	.42 (.21)	.29 (.15)	.54 (.19)	<.001	.37 (.23)	.21 (.20)	.52 (.15)	<.001
Meal 3	36	.35 (.24)	.21 (.18)	.48 (.23)	<.001	.31 (.25)	.20 (.22)	.41 (.22)	.006
Meal 4	33	.37 (.20)	.23 (.13)	.50 (.17)	<.001	.32 (.19)	.21 (.16)	.42 (.16)	.001

number of total utterances as those in the training group ($M = 132.29$, $SD = 27.17$) at baseline, $t(33) = -.70$, $p = .49$. Similarly, no differences in talkativeness were observed between children of control parents ($M = 53.0$, $SD = 18.87$) and children of trained parents ($M = 56.35$, $SD = 22.80$), $t(33) = -0.48$, $p = .64$. Thus, prior to random assignment, the average amount of DL and the overall talkativeness among parents and children was similar across conditions.

Does the Training Program Lead to Increases in Parents' Decontextualized Language?

The first research question addressed the extent to which the training program increased parents' decontextualized talk during naturalistic mealtime conversations. We used a two-level linear mixed effects model to estimate change over time in parents' PROPDL (Level 1) and examined whether this change differed between parents assigned to the training or control condition (Level 2). Exploratory analyses of the observed data indicated evidence of condition differences, and that the average parent PROPDL trajectory for both conditions was best represented by a curvilinear pattern (Figure 1A). Using these preliminary plots, we built a model that incorporated both a linear and quadratic measure of time.

$$PROPDL_{it} = \pi_{0i} + \pi_{1i}(t_{it} - 4) + \pi_{2i}(t_{it} - 4) + e_{it} \quad e_{it} \sim N(0, \sigma^2) \tag{1}$$

$$\pi_{0i} = \gamma_{00} + \gamma_{01}(Training) + u_{0i} \tag{2}$$

$$\pi_{1i} = \gamma_{10} + \gamma_{11}(Training) + u_{1i}$$

$$\pi_{2i} = \gamma_{20} + u_{2i} \qquad \boldsymbol{u_i} \sim N(0, \boldsymbol{T})$$

In Equation 1, $PROPDL_{it}$ represents the proportion of total utterances categorized as decontextualized for parent i at time t. Since the research question of interest was to detect differences between the control and training conditions, we recentered time at the end of study (mealtime 4). If time was not centered, parameter estimates would estimate PROPDL at baseline when differences between conditions were not present. This centering choice allowed us to estimate condition differences at the point furthest from training implementation, and is thus a more rigorous test of the training effects than if time was centered at an earlier measurement occasion. Therefore in this model, π_{0i} represents the intercept, or the predicted use of PROPDL at Mealtime 4, and π_{1i} represents the linear effect at Mealtime 4, and π_{2i} represents the quadratic effect at Mealtime 4 (i.e., how fast the function is accelerating/decelerating) for parent i.

In Equation (2), or the person-level of the model, π_{0i}, π_{1i}, and π_{2i} become outcomes in order to test condition differences in PROPDL. To estimate the hypothesized training boost in parents' PROPDL by the end of the study, a dummy variable *TRAINING* (γ_{01}; control = 0 and training = 1) was added to the Level 2 model. A positive value of γ_{01} indicates greater PROPDL use for the training condition compared to the control condition. Effects of training on the linear slope term (γ_{11}) were also modeled because exploratory data analysis suggested PROPDL trajectories were different for parents in the training condition.

All mixed effects analyses were conducted using SAS PROC MIXED, maximum likelihood method. To address our first research question, we tested the null hypothesis that the TRAINING parameter, γ_{01}, was zero (i.e., the difference in PROPDL between the two conditions at the end of the study). Results indicated that the difference between conditions in PROPDL use at mealtime 4 was significantly different from zero, $t(34) = 6.44$, $p < .001$, $d = 1.88$[1] (Table 3, Model 1). Estimated PROPDL use at mealtime 4 for the control condition averaged 18.2% ($SE = 3.0\%$) of their total utterances, whereas PROPDL for parents in the training condition was 49.1% ($SE = 5.0\%$) of their total utterances (as determined by summing the parameter intercept and the training parameter). Figure 1B displays estimates of PROPDL from Table 3, Model 1 for each condition across the five recorded interactions.

We next examined whether the training effect (i.e., the difference in PROPDL between the control and training conditions) was largest immediately after training (i.e., mealtime 1) or at the end of the study (i.e., mealtime 4) using model-based estimates derived from Model 1. Results indicated that that the training effect increased over time, such that the difference in PROPDL between conditions at Mealtime 4 (M difference = .27, $SE = .04$) was significantly larger than the difference at Mealtime 1 (M difference = .16, $SE = .04$), $t(134) = 3.03$, $p = .003$. Thus to answer the first research question, a brief parent-focused intervention caused parents to significantly increase their use of decontextualized conversation while conversing with their preschool children during home mealtimes and that this boost was largest one month following the training implementation.

Power and sample size considerations. The large condition effect at Meal 4 (unstandardized effect = .31; standardized effect = 1.70) combined with the small sample size ($N = 36$) raises the possibility that these effects may not be replicated with a different sample of parents. To provide some evidence against this possibility, we conducted a Monte Carlo simulation (Muthén & Muthén, 2002) to determine whether smaller condition differences would still yield adequate power for a sample of 36. In the field, standardized effects sizes for similar designs (e.g., those that experimentally manipulate parent input) range from 0.50 to 1.0 (e.g., Suskind et al., 2016). Simulation results indicate that there is power (.81) to find a standardized effect of approximately .50, and power (.99) to find a standardized effect of 1.0 given a sample size of 36 with the other estimates at their levels from the model. In other words, if we were to replicate the study and find an effect size that is one half or one quarter the size of the current study, there is still power between .81 and .99 to detect this difference.

Do Effects of Parent Training Transfer to Children?

The second research question examined whether children of trained parents increased their own use of decontextualized language. In other words, did the benefits of parent training transfer to children? As children's observed PROPDL (Figure 2A) was similar to that of parents, we built a model with the same parameters as the parent model described in Equations 1 and 2 to model change in children's PROPDL. Results indicated that training parents led to a significant increase in children's PROPDL, such that the condition difference was significantly different from zero

[1] We chose a standardized effect size calculated according to Raudenbush and Liu (2001) and is replicated here for clarity as: $\hat{\delta} = d = \hat{\gamma}_{01}/\sqrt{\tau^2+\sigma^2}$, where τ^2 is measurement error variance.

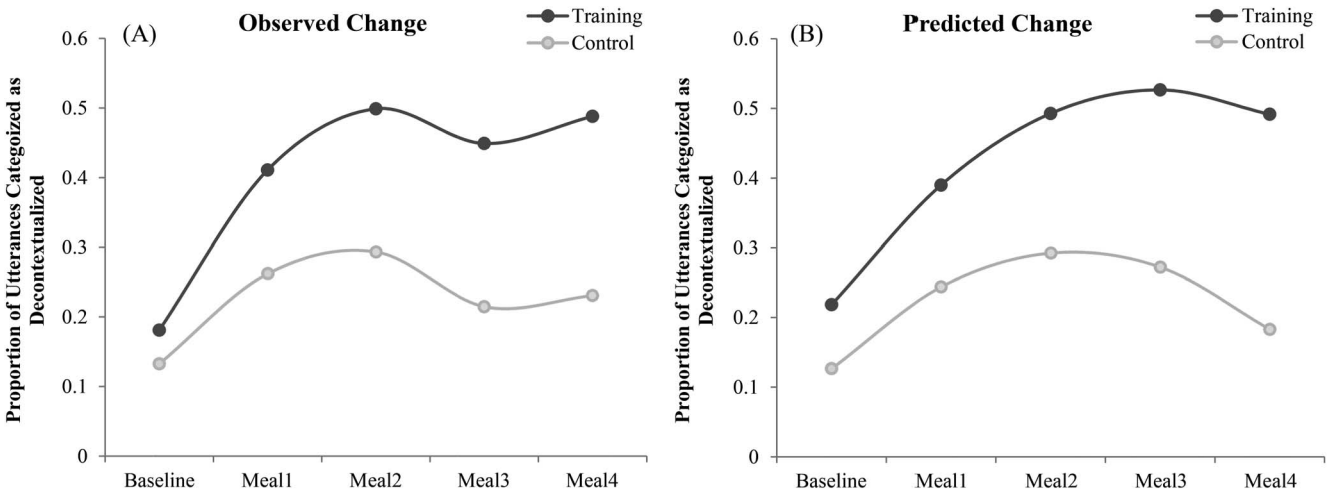

Figure 1. Left panel shows observed change in parents' proportion of total utterances coded as decontextualized. Right panel shows predicted change from mixed effects models.

at Mealtime 4, $t(31) = 4.75$, $p < .001$, $d = 1.62$ (Table 3, Model 2). Model-based estimates revealed that PROPDL made up 13.9% ($SE = 4.1\%$) of control group children's utterances and 42.1% ($SE = 5.3\%$) of training group children's utterances at Mealtime 4. Thus not only did the training program produce the desired change on parents, it also produced effects of similar magnitude for children of trained parents (Figure 2B).

To provide some evidence for the transfer of training effects from parents to children, we correlated the change in parent and child PROPDL from beginning to end of the study for families assigned to the training condition. We found that parents' change ($M = .31$, $SD = .20$) from baseline to Mealtime 4 was strongly and positively associated with children's change ($M = .30$, $SD = .16$) during the same time period ($r = .74$, $p < .001$). Importantly, all parents and children in the training condition increased their PROPDL between Mealtime 1 and Mealtime 4 (parent range = .06 to .81; child range = .03 to .77). Although correlations cannot imply causal relations, these significant correlations coupled with the experimental manipulation of parent talk offers some evidence for transfer of training effects from parent to child.

Table 3
Output of Mixed Effects Models for Estimating Parent and Child Proportion of Decontextualized Language

Parameter	Notation	Parent Model 1	Child Model 2
Fixed effects			
Intercept (centered)	π_{0i}	.18 (.04)***	.14 (.04)**
Linear time	π_{1i}	−.12 (.03)***	−.15 (.04)***
Quadratic time	π_{2i}	−.03 (.008)***	−.04 (.008)***
Training	γ_{01}	.31 (.05)***	.28 (.05)***
Training × Linear	γ_{11}	.05 (.02)**	.05 (.02)***
Random effects			
Level 1			
Within-person	σ^2	.03 (.003)***	.03 (.004)***
Level 2			
Intercept (centered)	τ^2	.003 (.002)†	.006 (.003)*
Goodness of fit			
−2LL		−.117.3	−.89.5

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Was the Training More Successful for Certain Types of Decontextualized Talk?

Given that the dependent variables from the first two research questions considered R.E.A.D.Y. talk as a composite variable, we considered whether these training effects were driven by one type of R.E.A.D.Y. talk. This analysis provides some evidence regarding whether certain decontextualized content may be easier to experimentally increase than others. We descriptively examined whether there were differences in the change from baseline to Mealtime 4 in proportion of utterances about past, future, explanations, or questions for parents assigned to the training condition. Results indicated that the largest change was in parents' talk about the past ($M_{change} = .14$, $SD = 15$), followed by future talk ($M_{change} = .12$, $SD = .22$). Increases in explanatory talk ($M_{change} = .05$, $SD = .10$) and open-ended questions ($M_{change} = .01$, $SD = .05$) were considerably smaller in magnitude.

Do Training Effects Generalize to Untrained Features of Parent and Child Speech?

As our analyses revealed significant boosts in decontextualized conversation for parents and children in the training condition, we examined what effect this change had on the overall composition of parent–child conversation. One possibility is that increases in the trained R.E.A.D.Y. conversations were simply a reflection of an increase in overall talk during the mealtime. If this were the case, then we would expect a significant increase in trained dyads' total number of utterances and their contextualized talk relative to control dyads. A second possibility—drawn explicitly from our theory of change—is that increases among the training group were limited only to decontextualized topics; by increasing knowledge and self-efficacy, trained parents came to understand decontextualized talk as a broad category of discourse comprising more than just the four examples of conversation covered in the training

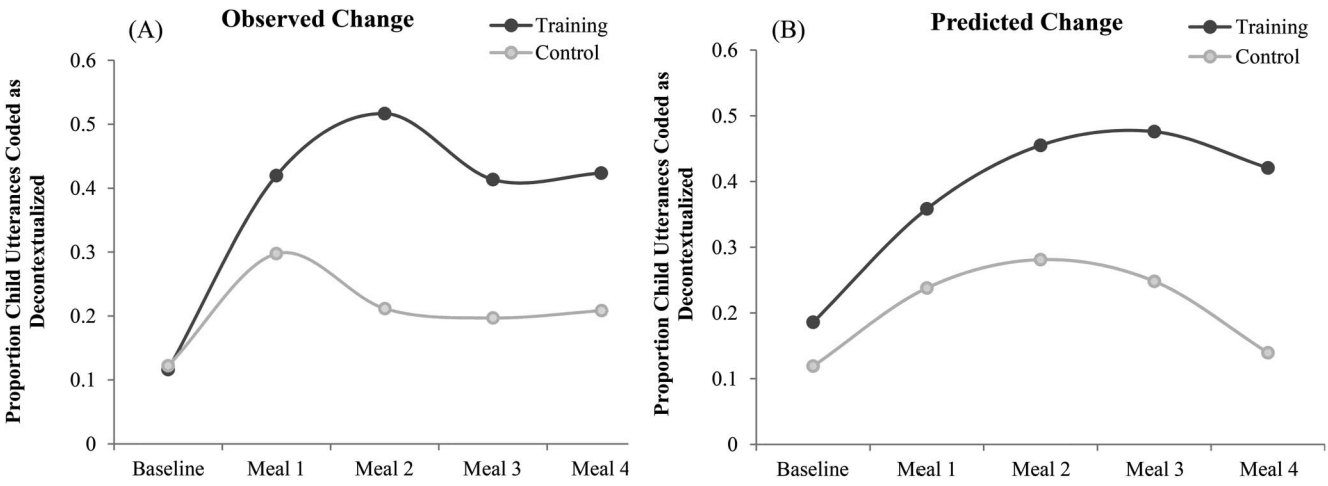

Figure 2. Left panel shows observed change in children's proportion of total utterances coded as decontextualized. Right panel shows predicted change from mixed effects models

video. If our data support this possibility, then dyads in the training condition should increase their use of untrained decontextualized language, or talk that is conceptually similar but not covered during training. However, these training effects should not appear in the total number of utterances or use of contextualized talk.

We tested these two possibilities by first examining condition differences in parent and child total utterances at Mealtime 4. We found no evidence that trained parents increased the quantity of their talk, as the number of utterances produced by trained parents was not significantly different from control parents, $t(31) = 1.05$, $p = .30$. The same nonsignificant pattern was observed for children of trained parents ($M = 74.53$) compared to children of control parents ($M = 63.44$), $t(31) = 1.07$, $p = .29$. Given that the total amount of parent–child utterances remained the same across conditions, we next computed model-based estimates using mixed effects models of untrained decontextualized language and contextualized language at Mealtime 4 and compared these estimates across conditions. Results suggest an overall shift in the content of conversation among training condition dyads. Figure 3 (left panel) illustrates that not only did parents' trained DL talk increase, but a significant increase in their use of untrained talk conversations was also observed, such that trained parents ($M = .22$, $SE = .04$) used significantly more untrained DL than control parents ($M = .13$, $SE = .03$), $t(34) = 2.30$, $p = .03$. In other words, by the end of the study, decontextualized language—both untrained and trained—comprised 70.9% of trained parents' utterances, compared to 31.9% for parents in the control condition (computed by summing the percent untrained and trained utterances). Critically, trained parents appeared to understand the broader boundaries of decontextualized language, as their total talk ($M = .29$, $SE = .05$) contained significantly less contextualized language than control group parents ($M = .69$, $SE = .04$), $t(34) = -7.02$, $p < .001$.

The breakdown of child talk at Mealtime 4 was similar to that of parents, but the condition differences were smaller in magnitude. Children of trained parents ($M = .26$; $SE = .04$) used more untrained decontextualized language than children of control parents ($M = .19$; $SE = .03$), but this difference was only marginally significant, $t(34) = 1.65$, $p = .10$. Summing children's use of trained and untrained decontextualized language yielded large condition differences: at the end of the study, decontextualized language (i.e., again, calculated by summing percent untrained and trained utterances) comprised 68.1% of the utterances among training condition children, compared to 33.3% for children in the control condition. Importantly, however, the proportion of contextualized talk among children of trained parents ($M = .32$, $SE = .06$) was significantly less than children of control parents ($M = .67$, $SE = .04$), $t(34) = -5.60$, $p < .001$. In sum, these analyses suggest that the training program changed the overall composition of mealtime conversation, a shift from talk that largely centered on topics grounded in the here-and-now, to more abstract topics about nonpresent entities argued to be foundational in children's preparation for academic language.

Discussion

The current study is the first to both experimentally manipulate an abstract style of parent–child conversation—decontextualized language—and to measure corresponding changes in these conversations during naturalistic mealtimes in the home. Previous work has demonstrated striking variation in how much parents and preschool-aged children use decontextualized talk, and that this variation is correlated with children's ability to benefit from and use academic language (Dickinson & Tabors, 2001; Snow, 1991; Uccelli et al., 2017). We build on this work by showing that many parents and children have room to increase how much of their conversation is decontextualized, and that a brief, one-time intervention coupled with four text message reminders was enough to boost parents' decontextualized talk to comprise almost half of their total speech, compared to roughly a quarter of parents' talk in the control condition.

Importantly, we also found that changing parents' decontextualized language led children to also transcend the here-and-now to include more decontextualized references in their everyday conversation. As children did not receive any direct decontextualized language training from experimenters, and that parent and child decontextualized talk was strongly and positively correlated, we

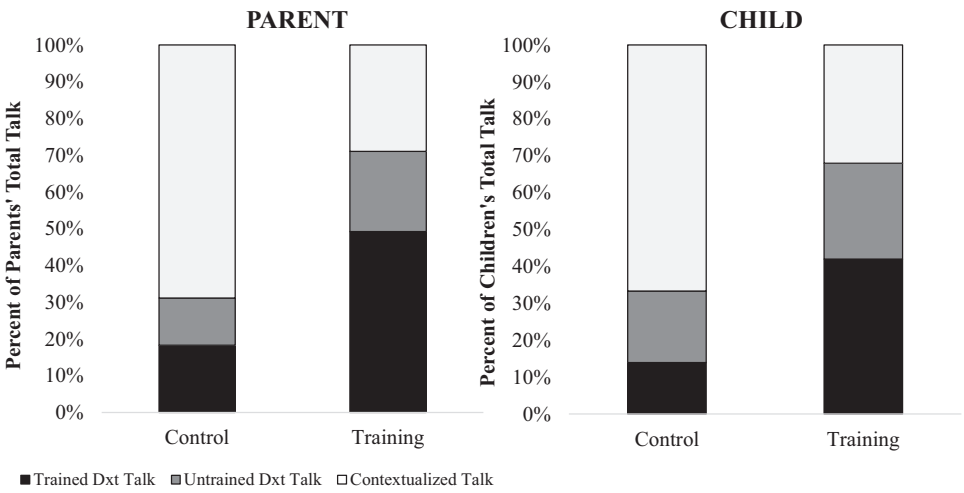

Figure 3. Breakdown of trained decontextualized language, untrained decontextualized language, and contextualized language at mealtime 4 for parents in the control and training conditions. Left panel displays parents' conversational content and right panel displays children's.

argue that exposure to parents' decontextualized language caused children to use more of it themselves. These results are especially encouraging, given that discussing these nonpresent, decontextualized topics is challenging for preschool-aged children to do spontaneously. Observational studies indicate that these conversations make up only between 5% and 15% of children's total talk, on average, depending on the context in which the conversation takes place (Dickinson & Tabors, 2001). We argue that briefly intervening with parents about the importance of decontextualized conversation is a powerful and simple way to give children more practice with the academic language register they will come to use during formal schooling. Much of the instruction children receive in school is about unobservable processes (oxygen), nonpresent people (George Washington), or historical events (The Civil War), all of which are conveyed in decontextualized and abstract ways. Thus, decontextualized conversation is one of the most powerful vehicles for transmitting knowledge from individual to individual, and as a result, a critical foundation for children's later academic achievement (e.g., Uccelli et al., 2017).

Interestingly, our descriptive analyses offered evidence that some types of decontextualized language were easier to increase than others, such that parent and child talk about the past increased the most following training implementation. This contributes to a large body of work showing it is possible to increase how elaborative parents and children are when reminiscing about shared past events (Peterson et al., 1999; Reese & Newcombe, 2007; Reese et al., 2010). Elaborative reminiscing training programs are focused on increasing the quality of past event conversations, and we add to this work showing that it is possible to increase how frequently parents and children spontaneously initiate past event conversations in naturalistic mealtime settings. Given that the majority of recorded mealtimes were dinners (58%), the high frequency of past talk may reflect a typical dinner time routine of discussing the events of the day, rather than breakfasts which may include more discussion of future events. A second explanation for why past talk increased the most is that it also occurred most frequently at baseline; this may reflect a routine that parents and children have developed for discussing the past, and receiving the training thus encouraged parent–child dyads to engage in the routine to a greater extent.

In addition to the observed increases in past talk, parents and children also increased the proportion of their talk devoted to future events. Past and future talk both involve discussion about displaced events (Labov, 1982), yet parent–child future talk has received less attention in the literature, and differs from past talk important ways that may afford children benefits beyond those available from past talk. Hudson (2002) found that future talk is often more temporally complex than past talk because it makes use of predictions that signal uncertainty (e.g., maybe we'll go to the store later today) rather than straightforward recounting of previously experienced events (e.g., yesterday we went to the store). In order to engage in future talk, children need the requisite planning skills and the ability to imagine their future self-engaging in an action or participating in an event. Indeed, a growing body of work has begun to examine the connections between future-oriented conversation and a broad array of cognitive outcomes termed prospection (e.g., the ability to plan for the future, the ability to delay gratification; Atance & O'Neill, 2005; Atance, Louw, & Clayton, 2015; Chernyak, Leech, & Rowe, 2017; Hudson, 2006). Given our finding that increasing parents' future talk led to increases in children's future talk, a next step would be to examine whether an intervention such as the one described here yields increases in children's prospection abilities in addition to decontextualized language production.

Although these two types of temporal conversations—past and future talk—increased following training implementation, we found that the other two types of R.E.A.D.Y. conversation—explanations and questions—were less susceptible to the intervention. Based on qualitative examination of the transcripts, we can speculate on two possible explanations for this smaller boost. First, our decontextualized coding scheme measured decontextualized talk at the level of the utterance. It is therefore possible that our findings were an artifact of this coding decision because past and future talk likely unfold over more utterances than explanations

and questions. Second, explanations often arise following the occurrence of a phenomenon or question by the child, contrary to past and future talk, which can be spontaneously initiated. Thus it is possible that trained parents were more successful at incorporating past and future events into their mealtime conversation because these concepts are more felicitous to initiate compared to explanations.

The Utility of Brief Parental Interventions

Seminal work in the field of parent–child interaction involves correlational studies indicating positive associations between parental linguistic input and children's language development (e.g., Hart & Risley, 1995) and that qualities of the input are often more predictive of language outcomes than the sheer quantity (Cartmill et al., 2013; Hirsh-Pasek et al., 2015; Hoff, 2003, 2006; Rowe, 2012; Rowe et al., 2017). We built and expanded on this work by showing that an experimental manipulation of an input quality is possible, and critically, yielded changes in children's own language production. The existing experimental work in the area of parent–child interaction has focused on increasing more concrete input features of the input such as gesture (Matthews et al., 2012) in 1 year olds, or the quantity of speech in 2 year olds (Suskind et al., 2016). Additionally, work that has focused on abstract decontextualized aspects of the input trained parents to increase conversation in highly structured contexts such as book-reading or structured reminiscing sessions in the laboratory (Boland et al., 2003; Morgan & Goldstein, 2004; Mol et al., 2008; Peterson et al., 1999; Reese & Newcombe, 2007). The present study expands on these findings by training parents to talk about other nonpresent topics such as future talk, explanatory talk, and open-ending questioning measured during less constrained mealtime settings.

We also found it quite encouraging that a decontextualized language training program enacted measurable and substantial change in parent and child behaviors from what is considered to be a small training dose—a 20-min training session and four reminders—relative to the designs used in past work. For instance, an elaborative reminiscing intervention described in Reese and Newcombe (2007) and Peterson et al. (1999), experimenters encouraged mothers to increase talk about past events, which was implemented over five sessions across a 10-month period. Suskind and colleagues (2016) encouraged caregivers to increase the quantity of their child-directed speech during eight 60-min sessions with trained intervention specialists. Effect sizes from these studies ranged from 0.5 to 1.0, whereas the effect sizes for our study were considerably larger (d = 1.6–1.8), suggesting that parent trainings can be brief but still yield positive effects. The fact that our training program was implemented via a short video during a single session suggests that the program can be scaled up and implemented in larger settings outside of controlled laboratory contexts. For example, the training program could feasibly be implemented in large-group settings (e.g., parent night at school, libraries) or be available online to reach more diverse populations of families. This flexible approach would allow for the program to reach a wider audience than the educated, English-speaking families who participated in the present study, who are also overrepresented, on average, in developmental research.

Targeting Parental Cognitions to Change Parent–Child Conversation

It was an open question of whether or not parents would be able to increase the amount of decontextualized language in their daily conversations because the concept of decontextualized language itself is abstract and opaque. We reasoned that parents would be motivated to do so if they came to understand the importance of decontextualized language and the important role that their conversations play in children's development. Our results supported this prediction: not only did trained parent–child dyads to increase their use of R.E.A.D.Y. talk, but these training gains extended to other nonpresent conversations (e.g., scripts, routines, and connections) that were not explicitly covered during the training program. Although it is possible that parents thought these untrained conversations fell under the R.E.A.D.Y. categories, we think this explanation is unlikely because parents' use of trained decontextualized language was more than two times as frequent as untrained decontextualized language. What we feel is a more compelling argument is that the training transmitted knowledge that R.E.A.D.Y. talk is a concept rather than a series of individual conversations. Thus, it is not surprising that parents increased untrained decontextualized language because they understood that these conversations fell under the broader concept of nonpresent talk and thus believed they were important to use with preschool-aged children. Interestingly, the finding that parents and children increased their untrained decontextualized talk runs contrary to prior work (e.g., Boland et al., 2003) that found that parents only increased strategies for reminiscing about the past that were covered explicitly during the training program. One difference is that Boland and colleagues' (2003) work focused solely on reminiscing about the past, while we targeted four types of nonpresent talk presented in the cohesive R.E.A.D.Y. framework. This training approach presumably gave parents multiple examples of what decontextualized language is and helped them realize that decontextualized language is a category.

It is worth mentioning that the content of the intervention did not overgeneralize, as the boosts in parent–child speech were targeted and isolated only to talk about the nonpresent and not contextualized talk or overall talkativeness. In fact, trained parent–child dyads significantly decreased their contextualized talk, and the total number of utterances produced during each mealtime remained the same over time. We argue that replacing contextualized talk with decontextualized talk should be considered as more evidence that parents understood decontextualized language as a concept rather than disparate, unrelated examples of parent–child conversation. We are not disappointed that the number of utterances did not increase, given that we know qualities of the input, such as decontextualized language, are more predictive than sheer input quantity for children of this age (e.g., Rowe, 2012). Thus, an intervention targeted at input quantity would likely not translate into child language gains.

Future Directions and Conclusions

We did not measure effects of the training program on parent and child use of decontextualized language beyond one month because we were most interested in determining the feasibility of

this general approach. Given that we found evidence of training gains a month following training, the next step is to determine just how long these gains persist and what is needed for the gains to be sustained. For example, future work may consider whether gains seen in the present study are maintained for a longer time period following training implementation (e.g., six months), and whether training boosters implemented via the text message reminders are necessary to maintain these gains.

Second, our choice to use a convenience sample of educated parents limits our understanding of whether all populations of parents and children can benefit from R.E.A.D.Y. talk. It is an empirical question of whether the results would be stronger or weaker when implemented with other populations, such as families of different socioeconomic status (SES) backgrounds. On one hand, decontextualized language may already be a part of educated parents conversational routines, making this population more amenable to change following the intervention. On the other hand, Rowe (2012) found that higher SES parents, on average, use certain types of decontextualized talk such as explanations more than lower-SES parents. Further, lower SES parents hold beliefs that are less consistent with research findings on child developmental milestones on average (Rowe, 2008), suggesting that educating lower SES parents about the benefits of parent–child conversation may yield even greater benefits than what was observed in the present study. Given that children from lower SES backgrounds are, on average, at greater risk for starting kindergarten with below-average oral language skills, a decontextualized training program may provide them with a crucial experience to help prevent these average gaps from substantiating and is therefore a critical direction for future research.

In sum, these findings should be considered a "proof-of-concept" of the idea that it is possible to increase a relatively abstract feature of children's input using a simple and brief parent training program. Encouraging decontextualized conversation with children from an early age offers several advantages to post hoc remediation strategies (e.g., intervening once language delays are evident), many of which have produced mixed results and require a large out-lay of time and resources (Bus, Van Ijzendorn, & Pelligrini, 1995; Peterson et al., 1999; Ruston & Schwanenflugel, 2010; Scarborough & Dobrich, 1994). Brief interventions such as the one described here are faster, cheaper, and more standardized than programs that try to change child behaviors directly, and do not involve expensive materials since the intervention itself revolves around enhancing existing conversation. Observational data suggests that even small amounts of decontextualized input when children are in preschool uniquely predict language and literacy skills from kindergarten entry through middle school (Dickinson & Tabors, 2001) as well as academic language proficiency (Uccelli et al., 2017). Therefore, the results of this study introduce a simple, scalable, and replicable approach to increase features of child language known to be foundational for children's academic success.

References

Atance, C. M., Louw, A., & Clayton, N. S. (2015). Thinking ahead about where something is needed: New insights about episodic foresight in preschoolers. *Journal of Experimental Child Psychology, 129,* 98–109. http://dx.doi.org/10.1016/j.jecp.2014.09.001

Atance, C. M., & O'Neill, D. K. (2005). The emergence of episodic future thinking in humans. *Learning and Motivation, 36,* 126–144. http://dx.doi.org/10.1016/j.lmot.2005.02.003

Aukrust, V. G., & Snow, C. E. (1998). Narratives and explanations during mealtime conversations in Norway and the U.S. *Language in Society, 27,* 221–246. http://dx.doi.org/10.1017/S0047404500019862

Beals, D. E. (2001). Eating and reading: Links between family conversations with preschoolers and later language and literacy. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language* (pp. 75–92). Baltimore, MD: Brookes.

Beals, D. E., & DeTemple, J. M. (1993). Home contributions to early language and literacy development. *National Reading Conference Yearbook, 42,* 207–215.

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development, 78,* 246–263. http://dx.doi.org/10.1111/j.1467-8624.2007.00995.x

Boland, A., Haden, C., & Ornstein, P. (2003). Boosting children's memory by training mothers in the use of an elaborative conversational style as an event unfolds. *Journal of Cognition and Development, 4,* 39–65. http://dx.doi.org/10.1080/15248372.2003.9669682

Bruner, J. (1982). The language of education. *Social Research, 49,* 835–853.

Bus, A., Van Ijzendorn, M., & Pelligrini, A. (1995). Joint book reading makes for success in learning to read: A meta-analysis of intergenerational transmission of literacy. *Review of Educational Research, 65,* 1–21. http://dx.doi.org/10.3102/00346543065001001

Cartmill, E. A., Armstrong, B. F., III, Gleitman, L. R., Goldin-Meadow, S., Medina, T. N., & Trueswell, J. C. (2013). Quality of early parent input predicts child vocabulary 3 years later. *Proceedings of the National Academy of Sciences of the United States of America, 110,* 11278–11283. http://dx.doi.org/10.1073/pnas.1309518110

Chernyak, N., Leech, K. A., & Rowe, M. L. (2017). Training preschoolers' prospective abilities through conversation about the extended self. *Developmental Psychology, 53,* 652–661. http://dx.doi.org/10.1037/dev0000283

Cummins, J. (1983). Language proficiency and academic achievement. *Issues in Language Testing Research, 10*8–130.

Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology, 33,* 934–945. http://dx.doi.org/10.1037/0012-1649.33.6.934

Curenton, S. M., & Justice, L. M. (2004). African American and Caucasian preschoolers' use of decontextualized language: Literate language features in oral narratives. *Language, Speech, and Hearing Services in Schools, 35,* 240–253. http://dx.doi.org/10.1044/0161-1461(2004/023)

Demir, Ö. E., Rowe, M. L., Heller, G., Goldin-Meadow, S., & Levine, S. C. (2015). Vocabulary, syntax, and narrative development in typically developing children and children with early unilateral brain injury: Early parental talk about the "there-and-then" matters. *Developmental Psychology, 51,* 161–175. http://dx.doi.org/10.1037/a0038476

Dickinson, D., & Tabors, P. (Eds.). (2001). *Beginning literacy with language: Young children learning at home and school*. Baltimore, MD: Brookes Publishing.

Duncan, G. J., Brooks-Gunn, J., & Klebanov, P. K. (1994). Economic deprivation and early childhood development. *Child Development, 65,* 296–318. http://dx.doi.org/10.2307/1131385

Duncan, G. J., Yeung, W. J., Brooks-Gunn, J., & Smith, J. R. (1998). How much does childhood poverty affect the life chances of children? *American Sociological Review, 63,* 406–423. http://dx.doi.org/10.2307/2657556

Durham, R. E., Farkas, G., Hammer, C. S., Tomblin, J. B., & Catts, H. W. (2007). Kindergarten oral language skill: A key variable in the intergenerational transmission of socioeconomic status. *Research in Social Strat-*

ification and Mobility, 25, 294–305. http://dx.doi.org/10.1016/j.rssm.2007.03.001

Garrett-Peters, P., Mills-Koonce, R., Adkins, D., Vernon-Feagans, L., Cox, M., & the The Family Life Project Key Investigators. (2008). Early environmental correlates of maternal emotion talk. *Parenting: Science and Practice, 8,* 117–152. http://dx.doi.org/10.1080/15295190802058900

Hart, B., & Risley, T. R. (1992). American parenting of language-learning children: Persisting differences in family–child interactions observed in natural home environments. *Developmental Psychology, 28,* 1096–1105. http://dx.doi.org/10.1037/0012-1649.28.6.1096

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experiences of young American children*. Baltimore, MD: Brookes.

Henrichs, L. F. (2010). *Academic language in early childhood interactions*. Amsterdam, the Netherlands: Amsterdam Center for Language and Communication.

Hirsh-Pasek, K., Adamson, L. B., Bakeman, R., Owen, M. T., Golinkoff, R. M., Pace, A., . . . Suma, K. (2015). The contribution of early communication quality to low-income children's language success. *Psychological Science, 26,* 1071–1083. http://dx.doi.org/10.1177/0956797615581493

Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development, 74,* 1368–1378. http://dx.doi.org/10.1111/1467-8624.00612

Hoff, E. (2006). How social contexts support and shape language development. *Developmental Psychology, 26,* 55–88.

Hudson, J. A. (2002). "Do you know what we're going to do this summer?": Mothers' talk to preschool children about future events. *Journal of Cognition and Development, 3,* 49–71. http://dx.doi.org/10.1207/S15327647JCD0301_4

Hudson, J. A. (2006). The development of future time concepts through mother-child conversation. *Merrill-Palmer Quarterly, 52,* 70–95. http://dx.doi.org/10.1353/mpq.2006.0005

Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., & Lyons, T. (1991). Early vocabulary growth: Relation to language input and gender. *Developmental Psychology, 27,* 236–248. http://dx.doi.org/10.1037/0012-1649.27.2.236

Katz, J. R. (2001). Playing at home: The talk of pretend play. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school*. Baltimore, MD: Brookes.

Labov, U. (1982). Speech actions and reactions in personal narrative. In D. Tannen (Ed.), *Analyzing discourse: Text and talk* (pp. 219–247). Washington, DC: Georgetown University Press.

MacWhinney, B. (2000). *The CHILDES project: Tools for analyzing talk* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.

Matthews, D., Behne, T., Lieven, E., & Tomasello, M. (2012). Origins of the human pointing gesture: A training study. *Developmental Science, 15,* 817–829. http://dx.doi.org/10.1111/j.1467-7687.2012.01181.x

Miller, S. A. (1998). Parents' beliefs about their children's cognitive development. *Child Development, 59,* 259–285. http://dx.doi.org/10.2307/1130311

Mol, S. E., Bus, A. G., de Jong, M. T., & Smeets, D. J. H. (2008). Added value of dialogic parent–child book readings: A meta-analysis. *Early Education and Development, 19,* 7–26. http://dx.doi.org/10.1080/10409280701838603

Morgan, L., & Goldstein, H. (2004). Teaching mothers of low socioeconomic status to use decontextualized language during storybook reading. *Journal of Early Intervention, 26,* 235–252. http://dx.doi.org/10.1177/105381510402600401

Muthén, L. K., & Muthén, B. O. (2002). How to use a Monte Carlo study to decide on sample size and determine power. *Structural Equation Modeling, 9,* 599–620.

Newport, E. L., Gleitman, H., & Gleitman, L. (1977). Mother, I'd rather do it myself: Some effects and noneffects of maternal speech style. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition* (pp. 109–150). Cambridge, MA: Cambridge University Press.

Pan, B. A., Rowe, M. L., Singer, J. D., & Snow, C. E. (2005). Maternal correlates of growth in toddler vocabulary production in low-income families. *Child Development, 76,* 763–782. http://dx.doi.org/10.1111/1467-8624.00498-i1

Paunesku, D., Walton, G. M., Romero, C., Smith, E. N., Yeager, D. S., & Dweck, C. S. (2015). Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science, 26,* 784–793. http://dx.doi.org/10.1177/0956797615571017

Peterson, C., Jesso, B., & McCabe, A. (1999). Encouraging narratives in preschoolers: An intervention study. *Journal of Child Language, 26,* 49–67. http://dx.doi.org/10.1017/S0305000998003651

Peterson, C., & McCabe, A. (1992). Parental styles of narrative elicitation: Effect on children's narrative structure and content. *First Language, 12,* 299–321. http://dx.doi.org/10.1177/014272379201203606

Raudenbush, S. W., & Liu, X.-F. (2001). Effects of study duration, frequency of observation, and sample size on power in studies of group differences in polynomial change. *Psychological Methods, 6,* 387–401. http://dx.doi.org/10.1037/1082-989X.6.4.387

Reese, E., Leyva, D., Sparks, A., & Grolnick, W. (2010). Maternal elaborative reminiscing increases low-income children's narrative skills relative to dialogic reading. *Early Education and Development, 21,* 318–342. http://dx.doi.org/10.1080/10409289.2010.481552

Reese, E., & Newcombe, R. (2007). Training mothers in elaborative reminiscing enhances children's autobiographical memory and narrative. *Child Development, 78,* 1153–1170. http://dx.doi.org/10.1111/j.1467-8624.2007.01058.x

Rowe, M. L. (2008). Child-directed speech: Relation to socioeconomic status, knowledge of child development and child vocabulary skill. *Journal of Child Language, 35,* 185–205. http://dx.doi.org/10.1017/S0305000907008343

Rowe, M. L. (2012). A longitudinal investigation of the role of quantity and quality of child-directed speech in vocabulary development. *Child Development, 83,* 1762–1774. http://dx.doi.org/10.1111/j.1467-8624.2012.01805.x

Rowe, M. L. (2013). Decontextualized language input and preschoolers' vocabulary development. *Seminars in Speech and Language, 34,* 260–266. http://dx.doi.org/10.1055/s-0033-1353444

Rowe, M. L., Leech, K. A., & Cabrera, N. (2017). Going beyond input quantity: Wh- questions matter for toddlers' language and cognitive development. *Cognitive Science, 41,* 162–179. http://dx.doi.org/10.1111/cogs.12349

Rowe, M. L., Raudenbush, S. W., & Goldin-Meadow, S. (2012). The pace of vocabulary growth helps predict later vocabulary skill. *Child Development, 83,* 508–525. http://dx.doi.org/10.1111/j.1467-8624.2011.01710.x

Ruston, H. P., & Schwanenflugel, P. J. (2010). Effects of a conversation intervention on the expressive vocabulary development of prekindergarten children. *Language, Speech, and Hearing Services in Schools, 41,* 303–313. http://dx.doi.org/10.1044/0161-1461(2009/08-0100)

Sachs, J. (1983). Talking about the there and then: The emergence of displaced reference in parent–child discourse. In K. E. Nelson (Ed.), *Children's language* (Vol. 4, pp. 1–28). Hillsdale, NJ: Lawrence Erlbaum.

Scarborough, H., & Dobrich, W. (1994). On the efficacy of reading books to preschoolers. *Developmental Review, 14,* 245–302. http://dx.doi.org/10.1006/drev.1994.1010

Snow, C. E. (1983). Literacy and language: Relationships during the preschool years. *Harvard Educational Review, 53,* 165–190. http://dx.doi.org/10.17763/haer.53.2.t6177w39817w2861

Snow, C. E. (1990). The development of definitional skill. *Journal of Child Language, 17,* 697–710. http://dx.doi.org/10.1017/S0305000900010953

Snow, C. E. (1991). The theoretical basis for the relationships between language and literacy in development. *Journal of Research in Childhood Education, 6,* 5–10. http://dx.doi.org/10.1080/02568549109594817

Snow, C. E. (2010). Academic language and the challenge of reading for learning about science. *Science, 328,* 450–452. http://dx.doi.org/10.1126/science.1182597

Snow, C. E., & Beals, D. E. (2006). Mealtime talk that supports literacy development. *New Directions for Child and Adolescent Development, 111,* 51–66. http://dx.doi.org/10.1002/cd.155

Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties*. Washington, DC: National Academy Press.

Snow, C. E., Uccelli, P. (2009). The challenge of academic language. In D. R. Olson, N. Torrance (Eds.), *The Cambridge handbook of literacy* (pp. 112–133). New York, NY: Cambridge University Press.

Suskind, D. L., Leffel, K. R., Graf, E., Hernandez, M. W., Gunderson, E. A., Sapolich, S. G., . . . Levine, S. C. (2016). A parent-directed language intervention for children of low socioeconomic status: A randomized controlled pilot study. *Journal of Child Language, 43,* 366–406. http://dx.doi.org/10.1017/s0305000915000033

Tabors, P. O., Roach, K. A., & Snow, C. E. (2001). Home language and literacy environments: Final results. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and in school* (pp. 111–38). Baltimore, MD: Brookes.

Uccelli, P., Demir, E., Rowe, M. L., Levine, S., & Goldin-Meadow, S. (2017). *Children's early decontextualized talk predicts academic language proficiency in mid-adolescence*. Manuscript submitted for review.

Uccelli, P., Hemphill, L., Pan, B. A., & Snow, C. (2005). Conversing with toddlers about the nonpresent: Precursors to narrative development in two genres. In L. Balter & C. Tamis-Lemonda (Eds.), *Child psychology: A handbook of contemporary issues* (2nd ed., pp. 215–237). Philadelphia, PA: Psychology Press.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science, 331,* 1447–1451. http://dx.doi.org/10.1126/science.1198364

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