2014

Engagement Differences for 2-year-olds Identified as Late Talker

Brianna E. Hendrickson
University of Nebraska at Omaha

Shari L. DeVeney
University of Nebraska at Omaha, sdeveney@unomaha.edu

Engagement Differences for 2-year-olds Identified as Late Talker

Brianna E. Hendrickson
Shari L. DeVeney*

University of Nebraska at Omaha

Abstract

The investigators compared engagement in language-rich activities for 2-year-olds identified as late talkers and their typically developing peers. Participants included twelve 2-year-old children ranging in age from 24- to 33-months of age (*M* = 27 months; *SD*= 2.906), three were identified as being typically developing, five were identified as having expressive-only language delay, and four were identified as having expressive *and* receptive language delay. From videotaped interactions, child behaviors were coded as unengaged (e.g., uninvolved with any specific people, objects, or symbols), onlooking (e.g., watching researcher or parent activity, but not taking part), person engaged (e.g., involved solely with researcher/parent as social partners), or object engaged (e.g., playing with objects such as toys and/or picture symbols alone) for 15-second increments of all videotaped interactions (*M* = 378.13 minutes per participant; *SD* = 11.89). Consistent with previous findings for typically developing and expressive-only late talkers, no significant engagement differences were noted across participant groupings; however, a nonsignificant trend was notable for object-engagement with expressive-receptive late talkers.

Background

Late talkers are 2-year-old children who produce few words and word combinations without cognitive or sensory (e.g., hearing) deficits present (Rescorla & Dale, 2013). They consist of approximately 10-15 percent of 2-year-olds and are generally categorized into two subgroups: those identified with expressive-only language delay and those identified with expressive and receptive language delay (e.g., using gestures more often than words to communicate, unable to use words for a variety of purposes like labeling objects or answering yes/no questions) and those identified with receptive language delay (e.g., unable to follow simple commands even with a gesture cue; unable to identify basic body parts like nose and mouth) in addition to an expressive delay (Kelly, 1998; Thal, Tobias, & Morrison, 1991; Tysbina & Eriks-Brophy, 2007). Although many aspects of late talking have been researched (see Desmarais, Sylvestre, Meyer, Bairati, & Rouleau, 2008; Rescorla, 2002, 2005, 2009), few investigators have explored the potential differences in engagement between late talkers and typically developing peers and among subgroups of late talkers. Engagement has been operationally defined as the ability to control attention to explore and interact with social partners, follow attentional state of others, and maintain attention to a social contest through onlooking with an interactive partner or object/toy (Bakeman & Adamson, 1984). In contrast, unengagement has been operationally defined as not being involved with a specific social partner, object, or activity (Bakeman & Adamson, 1984).

For several decades, researchers have been investigating correlations between engagement in social interactions and speech-language development for young children who are typically developing as well as those identified as having an early language delay (i.e., "late talkers"). In general, researchers have found positive associations between early language development and attention/engagement to language-rich activities (Adamson, Bakeman, & Deckner, 2004; Smith, Adamson, & Bakeman, 1988). Among the theories that have been proposed regarding this positive connection is a link between early

language development and attention or engagement to language-rich activities. According to Smith et al. (1988), "A positive relation between joint attention and early word learning has been found repeatedly" (p. 1171). Other researchers have concluded that by the middle of the second year of life, young children are typically able to sustain periods of coordinated joint engagement during social interactions with mothers and with peers (Bakeman & Adamson, 1984).

As noted above, few investigators have compared engagement differences between late talkers and typically developing peers. Those who did compared expressive-only language delayed late talkers and found that different types of engagement were associated with different aspects of development. In one longitudinal study, Vuksanovic and Bjekic (2013) compared 25 late talkers who were 26 and 36 months of age with 5-month younger typically developing 2-year-olds and found that typically developing toddlers exhibited more engagement than late talkers at 18 months, but not at 30 months. Additionally, Adamson et al. (2004) found that engagement focused on objects rather than people may be a sign of developmental immaturity. However, to date, no researchers have investigated potential differences in engagement between subgroups of late talkers, those who are identified with expressive-only language delay, and those who exhibit receptive language delays as well. Because of this dearth in the literature, very little is known about the role of language comprehension in the engagement process. Potentially, the presence of an early receptive language delay may be negatively associated with engagement in language-rich activities.

The purpose of the present study was to determine the types of engagement 2-year-olds are involved in during language-rich activity samples. The aim was to investigate the connection between a young child's engagement in a language-rich activity and the presence of an early language delay.

The following research questions were addressed:

- When participating in a language-rich activity, is there a difference in overall engagement and unengagement between typically developing 2-year-olds, expressive-only late talkers, and expressive-receptive late talkers?
- When engaged in a language-rich activity, are there differences in the types of engagement behaviors observed (e.g., engagement with objects, engagement with people, onlooking) between typically developing 2-year-olds, expressive-only late talkers, and expressive-receptive late talkers?

Method

Participants

The present study was conducted using a combined archival data set (DeVeney, 2012; DeVeney, Cress, & Reid, 2014). Participants include twelve 2-year-old children ranging in age from 24- to 33-months of age (*M* = 27 months; *SD* = 2.906), three were identified as being typically developing, five were identified with expressive-only language delay, and four were identified with expressive and receptive language delay. All were primarily English speakers from the Midwest whose parents reported no concerns for hearing or vision. All received a passing score on the *Modified Checklist for Autism in Toddlers* (M-CHAT) and scored within one standard deviation of the mean on the *Battelle Developmental Inventory-2* (BDI-2) *Cognitive* and *Motor* subtests.

In addition, children identified as late talkers obtained scores below the 10th percentile on the *MacArthur Bates Communicative Development Inventory: Words and Sentences* (CDI) and scored more than one standard deviation below the mean on the *Preschool Language Scale-5th edition* (PLS-5) *Expressive Communication* subtest. Children identified as having an additional receptive language delay also scored more than one standard deviation below the mean on the PLS-5 *Auditory Comprehension* subtest. See Table 1 for a summary of participant intake data.

Procedures

From videotaped interactions with the second author during previous experimental sessions including baseline, intervention, and follow up sessions, engagement was coded for all participants in 15-second increments for all experimental sessions. Coding was conducted using a coding scheme adapted from Adamson et al. (2004) and included the following categorical distinctions: (a) unengaged (e.g., uninvolved with any specific people, objects, or symbols), (b) onlooking (e.g., watching researcher or parent activity but not taking part), (c) person engaged (e.g., involved solely with researcher/parent as social partners), and (d) object engaged (e.g., playing with objects such as toys and/or picture symbols alone).

The data were compared across subgroups for differences in engagement and unengagement as well as differences in types of engagement. Consistent with procedures used by Adamson et al. (2004), four types of engagement were measured: unengaged, onlooking, person engaged, and object engaged. All videotapes were transcribed independently by the first author. The first author was trained to at least 90 percent agreement with the second author (faculty advisor). The first author then trained additional student coders. Reliability was established with the faculty advisor and four undergraduate students majoring in speech-language pathology who, after training on the coding scheme up to 90 percent agreement, re-coded 20 percent of the data set. Inter-rater reliability with the first author ranged from 83 to 95 percent for point-by-point agreement (*M* = 88%).

Results

A Kruskal-Wallis H test was selected for statistical analysis of the data because, given the study's small sample size, the assumption that there was normality in the data was not necessary. The Kruskal Wallis H is a nonparametric test equivalent to the one-way ANOVA and an extension of the Mann-Whitney U test to allow for comparison of three or more independent groups. The Kruskal-Wallis H is an omnibus statistical test; thus, it cannot be used to discern which specific groups were significantly different from each other—only that at least two groups were different. When appropriate, post hoc analyses are then used to indicate which pair of means were significantly different. Two assumptions must be met in order to conduct a Kruskal-Wallis H test: (a) three or more categorical independent groups are present and (b) the dependent variable should be measured at the ordinal or interval/ratio level. The data collected for the present study satisfied both assumptions. Consequently, the Kruskal-Wallis H was selected to analyze the data set.

First, a Kruskal-Wallis H test was conducted to evaluate differences among the participant groups (typically developing, expressive-only late talkers, and expressive-receptive late talkers) on median differences in engagement (unengaged and engaged). The test, corrected for tied ranks, was not significant ($H(2) = 1.450$, $p = .484$), indicating that no significant differences in engaged versus unengaged behaviors were observed for the participant groups. A second Kruskal-Wallis H test was

conducted to evaluate similarities among participant groups for medians in type of engagement (onlooking, person, object). Results again were not significant for onlooking, ($H(2) = .626$, $p = .731$), person, ($H(2) = 1.472$, $p = .479$), or object ($H(2) = 3.364$, $p = .186$), indicating that no significant differences in type of engagement for each participant group were observed.

Although medial differences in types of engagement were not significantly different across participant groups, further examinations of rank sums did indicate nonsignficant differences according to group membership. Typically developing participants were more likely to engage in "onlooking" than the expressive-only and expressive-receptive participants (mean rank = 7.67 compared with 6.60 and 5.50, respectively). They were least likely to engage in "person" (mean rank = 4.33 compared with 7.40 and 7.00) or "object" (mean rank = 3.33 compared with 7.00 and 8.25). The expressive-only late talking participants were most likely to engage with "person" (mean rank = 7.40) compared with the other two experimental groups and the expressive-receptive late talking participants were most likely to engage with "object" (mean rank = 8.25) than the other two experimental groups; however, these results were not significant. Further post-hoc comparisons were not conducted given the lack of significance of the Kruskal-Wallis H tests, which indicated that no pair of means was significantly different from others.

Discussion

Consistent with previous findings for typically developing and expressive-only late talkers (Adamson et al., 2004; Vuksanovic & Bjekic, 2013), no significant engagement differences were noted between typically developing peers and expressive-only late talkers across participant groupings. Although Vuksanovic and Bjekic (2013) found typically developing toddlers exhibited more engagement than expressive-only late talkers at 18 months, they did not replicate this finding at 30-month-olds. The results of the present study, which involved 24- to 33-month-olds with a mean age of 27 months, were consistent with Vuksanovic and Bjekic's 30-month-old results. The findings support the notion that the breakdown of the language process is not occurring because of a lack of engagement.

In addition, the findings of the present study indicate that no differences in overall engagement versus unengagement were noted between any of the participant groups, including expressive-receptive late talkers. This finding did not support the potential association between receptive language delay and lack of engagement, the notion that a child's receptive language delays may be associated with a lack of engagement. No significant differences in engagement were noted across groups.

Finally, although no significant differences were noted for type of engagement, a nonsignificant trend was notable during the examination of rank sums. The expressive-receptive late talkers were more likely to engage with objects than either of the other two groups, a behavior that Adamson et al. (2004) associated with lower developmental maturity. Given a larger participant sample, this finding may reach significance. Due to the pilot nature of the present study, an a priori power analysis was not conducted and the small group sizes limited the generalizability of the study results.

Limitations and Future Direction

There were limitations to the present study. The most prominent of which is the small sample size. A small sample size may allow the results of one participant to potentially skew the data in one direction. Replication of the study with a larger group comparison is recommended; however, the nature of the present study as pilot work to indicate the potential for future projects along a similar vein should be

considered. The data coding scheme was very limited and basic, again due to the nature and purpose of the present study. Extending the data coding scheme into more nuanced categories of the Adamson et al. (2004) study, such as "symbol-infused," "coordinated joint attention," and "symbol-infused coordinated joint" is another possible extension of the present study.

Clinical Significance

Children with different language proficiencies may present different clinical profiles but all have potential to be actively engaged in treatment. There is no reason to suspect that children with receptive language delay will be less engaged in therapeutic activities. However, young children presenting with receptive language delay may be more likely to attend to objects than young children presenting with only expressive language delay. In order to facilitate person-oriented engagement, many speech language pathologists (SLPs) working with early childhood population position target objects close to their face when communicating about it. Thus, bringing the child's focus to the SLP and adult model of target word use to promote modeling of quality adult input to further language development.

Acknowledgements

This project was funded through the Fund for Undergraduate Scholarly Experiences (FUSE) grant awarded to the first author. The authors would like to acknowledge the children and their families who participated as well as Alson Buam, Sarah Noetzel, Jana Steiner, and Katherine Wittler for their assistance coding the data set with the Toddler Communication Lab.

References

Adamson, L.B., Bakeman, R., & Deckner, D. F. (2004). The development of symbol-infused joint engagement. *Society for Research in Child Development*, *75*, 1171-1187.

Bakeman, R., & Adamson, L.B. (1984). Coordinating attention to people and objects in mother-infant and peer-infant interaction.*Child Development*, *55*, 1278-1289.

Desmarais, C., Sylvestre, A., Meyer, F., Bairati, I., & Rouleau, N. (2008). Systematic review of the literature on characteristics of late-talking toddlers. *International Journal of Language & Communication Disorders*, *43*, 361-389.

DeVeney, S.L. (2012). *Novel word requests with picture symbols across language skill proficiencies of young children.* (Unpublished doctoral dissertation). University of Nebraska - Lincoln, Lincoln, NE.

DeVeney, S.L., Cress, C., & Reid, R. (2014). Comparison of two word learning techniques and the effects of neighborhood density for late talkers. *Communication Disorders Quarterly, 35, 133-145.*

Kelly, D. J. (1998). A clinical synthesis of the `late talker' literature: Implications for service delivery. *Language, Speech and Hearing Services in Schools, 29*, 76.

Rescorla, L. (2002). Language and reading outcomes to age 9 in late-talking toddlers. *Journal of Speech, Language, and Hearing Research*, *48,* 459-472.

Rescorla, L. (2005). Age 13 language and reading outcomes in late-talking toddlers. *Journal of Speech, Language, and Hearing Research*, *48*, 459-472.

Rescorla, L. (2009). Age 17 language and reading outcomes in late-talking toddlers: Support for a dimensional perspective on language delay. *Journal of Speech, Language, and Hearing Research, 52,* 16-30.

Rescorla, L. & Dale, P. (2013). *Late talkers: Language development, interventions, and outcomes.* Baltimore, MD: Paul H. Brookes.

Smith, C. B., Adamson, L. B., & Bakeman, R. (1988). Interactional predictors of early language. *First Language*, *8*, 143-156.

Thal, D., Tobias, S., & Morrison, D. (1991). Language and gesture in late talkers: A 1-year follow-up. *Journal of Speech and Hearing Research, 34*, 604-612.

Tsybina, I., & Eriks-Brophy, A. (2007). Issues in Research on children with early language delay. *Contemporary Issues in Communication Science and Disorders*, *34*, 118-133.

Vuksanovic, J., & Bjekic, J. (2013). Developmental relationship between language and joint attention in late talkers. *Research in Developmental Disabilities, 34*, 2360-2368.

Table 1. Participant Descriptions

Descriptor	Participants				
	TD1a	*TD2*	*TD3*	*EO1b*	*EO2*
Aged	2;1	2;4	2;4	2;1	2;3
Gender	M	M	M	F	M
Pre MLUe	1.49	1.82	1.76	1.02	1.22
Post MLU	1.94	2.33	1.66	1.06	1.49
PLS Exp.f					
Raw	31	34	28	24	25
SS	103	113	94	82	85
%tile	58th	81st	34th	12th	16th
PLS Aud.g					
Raw	26	33	31	28	31
SS	89	109	103	95	95
%tile	23rd	73rd	58th	37th	37th
CDI/CDI IIIh					
Raw	235	516	290	47	62
%tile	35th	75th	25th	<5th	<5th
	EO3	*EO4*	*EO5*	*ER1c*	*ER2*
Aged	2;3	2;1	2;7	2;0	2;1
Gender	M	M	M	M	F
Pre MLUe	1.08	1.64	1.38	1.00	1.36

Post MLU	1.26	1.75	1.76	1.00	1.33
PLS Exp.f					
Raw	25	27	28	20	22
SS	85	85	74	71	77
%tile	16th	16th	4th	3rd	6th
PLS Aud.g					
Raw	31	29	39	23	19
SS	103	94	110	79	66
%tile	58th	34th	75th	8th	1st
CDI/CDI IIIh					
Raw	62	50	27/5	3	20
%tile	<5th	<10th	<10th	<5th	<5th
	ER3	*ER4*			
Aged	2;7	2;9			
Gender	M	F			
Pre MLUe	1.13	1.57			
Post MLU	1.14	2.51			
PLS Exp.f					
Raw	24	31			
SS	75	79			
%tile	5th	8th			

PLS Aud.g					
Raw	25	22			
SS	73	59			
%tile	4th	1st			
CDI/CDI IIIh					
Raw	31	215/12			
%tile	<5th	<5th			

a TD = Typically developing participants
b EO = Expressive-only late talkers participants
c ER = Expressive-receptive late talkers participants
d Chronological age for each participant recorded in year and month.
e Mean length of utterance in morphemes obtained during first screening visit.
f PLS Exp. = Preschool Language Scales 5th Edition Expressive Communication Subtest
g PLS Aud. = Preschool Language Scales 5th Edition Auditory Communication Subtest
h CDI/CDI III = Communicative Development Inventory

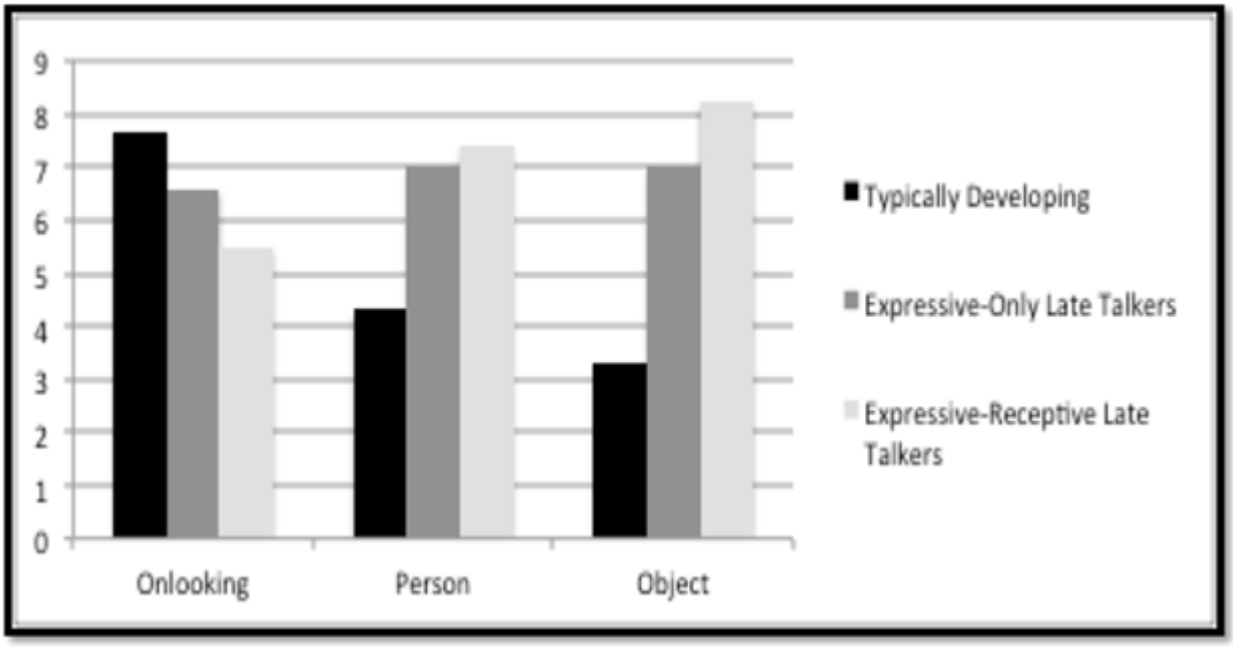

Figure 1. Type of engagement (onlooking, person, and object) by participant group (typical, expressive-only late talkers, and expressive-receptive late talkers).