

Is Toy Carriage During Walking Related to Language Ability?

INTRODUCTION

- Onset of independent walking is associated with increases in receptive and productive vocabulary abilities in infants (Walle & Campos, 2014).
- Previous research suggests that self-produced locomotion may lead to this increase in language abilities (Walle & Campos, 2014; Oudgenoeg-Paz et al., 2016), but the mechanisms underlying this relationship remain unclear.
- Given that independent walking provides infants with unique opportunities to walk while carrying toys, these toy carriage walking bouts might be key to this observed increase in word learning.
- Newly standing infants are more stable when holding toys (Claxton et al., 2012) and newly walking infants are less likely to fall when carrying toys while walking (Karasik et al., 2014).
- This increased stability may result from infants stabilizing their visual attention on the toy that they are holding in order to aid in learning the toy's name (Smith, 2013).

PURPOSE

To examine if amount of time walking while carrying a toy was related to receptive and productive vocabulary abilities in newly walking infants.

METHODS

Participants: N = 18 new walkers (5 male; M_{age} = 13 m, 17 d)

Procedure: Participants engaged in a 20-minute free-play session with their parent(s) during which they were provided a variety of toys (Figure 1).

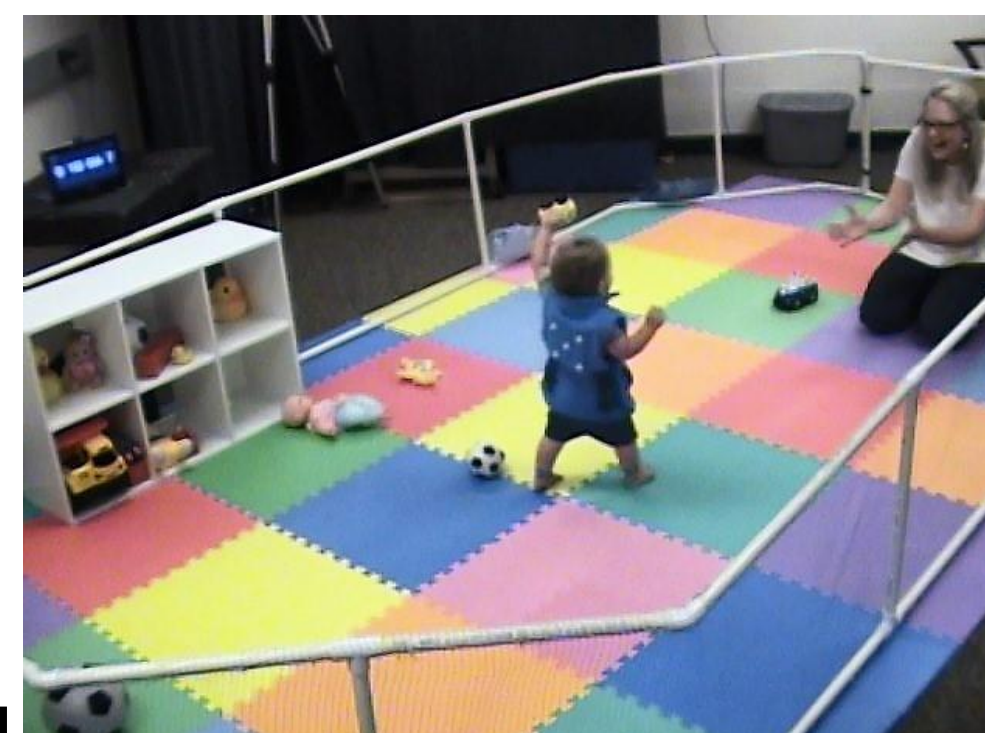


Figure 1. free-play session

MEASURES

Walking experience: parent-reported age of walking onset

Toy walking bouts: at least four continuous forward steps in which the child carried a toy

No-toy walking bouts: at least four continuous forward steps in which the child walked without a toy

Total time in motion: sum of the toy and no-toy walking bout times

Receptive and productive vocabulary scores: Words and Gestures form of the MacArthur-Bates Communicative Development Inventory (Fenson et al., 2007).

RESULTS

Bivariate correlation analysis was used for comparisons (Table 1). Similar to previous research, walking experience was positively correlated with productive vocabulary and trended toward a positive correlation with receptive vocabulary. Total time in motion did not correlate with either vocabulary measure. However, when separating total time in motion into toy and no-toy walking bouts, toy walking bouts was positively correlated with receptive (Figure 2), but not productive language. There was no correlation between no-toy walking bouts and receptive or productive vocabulary scores. Finally, there was no relationship between time spent in motion and walking experience.

Variable	RV	PV	WE	TTW	TWBT	NTWBT
Receptive Vocabulary	--					
Productive Vocabulary	.30	--				
Walking Experience (weeks)	.40*	.48**	--			
Total Time Walking (seconds)	.28	.24	.23	--		
Toy Walking Bout Time (seconds)	.56**	.31	.39	.77**	--	
No Toy Walking Bout Time (seconds)	-.35	-.06	-.18	.47**	-.20	--
Mean	91.1	8.7	8.9	123.8	61.0	62.8
SD	63.2	6.5	6.1	60.9	54.9	39.6
Response Range	12-267	0-26	1-20	29.7-208.9	0-203.7	5.2-131

Table 1. Means, standard deviations (SD), and correlations among receptive vocabulary scores (RV), productive vocabulary scores (PV), walking experience (WE), total time walking (TTW), toy walking bout time (TWBT), no-toy walking bout time (NTWBT). Note. ** $p \leq .05$, * $p \leq .10$

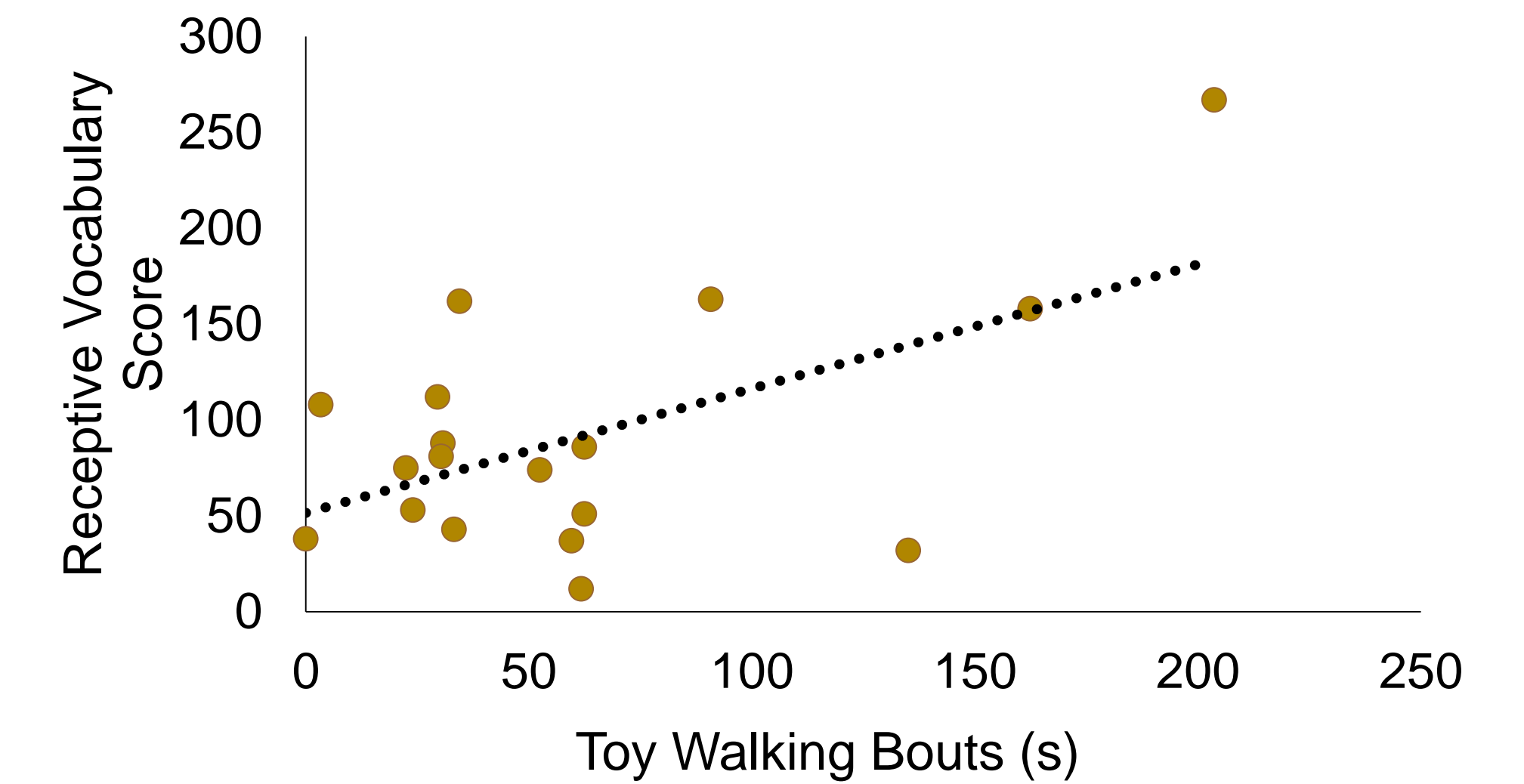


Figure 2. Relationship between receptive vocabulary scores and toy walking bouts.

DISCUSSION

- Overall, **new walkers who spent more time walking while carrying a toy had higher receptive abilities.**
- The relationship between time spent in motion with a toy and productive vocabulary abilities may develop later**, given that productive language lags behind receptive language development.
- No relationships between vocabulary ability and total time in motion and the no-toy walking bouts further suggests that **time spent engaged in toy walking bouts may be an important factor underlying this relationship between language and walking onset.**
- Furthermore, the lack of relationship between walking experience and time in motion suggests that walking ability does not predict new walkers' movement time.
- Given that stabilization of the body while in motion may be driving this relationship, future research should measure infants' abilities to modify their gait and stabilize their upper bodies while walking and carrying toys.

REFERENCES

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