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# A Compendium of Core Lexicon Checklists

**Sarah Grace Hudspeth Dalton, Ph.D., CCC-SLP,<sup>1</sup> Hana Kim, M.A.,<sup>2</sup>  
Jessica D. Richardson, Ph.D., CCC-SLP,<sup>3</sup> and  
Heather Harris Wright, Ph.D., CCC-SLP<sup>2</sup>**

## ABSTRACT

Core Lexicon (CoreLex) is a relatively new approach assessing lexical use in discourse. CoreLex examines the specific lexical items used to tell a story, or how typical lexical items are compared with a normative sample. This method has great potential for clinical utilization because CoreLex measures are fast, easy to administer, and correlate with microlinguistic and macrolinguistic discourse measures. The purpose of this article is to provide clinicians with a centralized resource for currently available CoreLex checklists, including information regarding development, norms, and guidelines for use.

**KEYWORDS:** discourse, aphasia, Core Lexicon

**Learning Outcomes:** As a result of this activity, the reader will be able to (1) list previous studies that have developed Core Lexicon checklists; (2) discuss the different methods used to develop Core Lexicon measures and how that impacts implementation; and (3) identify the most appropriate Core Lexicon list for a given situation.

Calls for increased use of discourse analysis to diagnose and monitor treatment response in persons with aphasia (PWAs) are more frequent as treatment foci shift from rehabilitating specific linguistic deficits to optimizing functional, everyday communication.<sup>1-3</sup> Core Lexicon (CoreLex) discourse measures have great potential for clinical utilization because they are fast, easy to administer, and correlate with microlinguistic and macrolinguistic discourse measures. CoreLex is used to examine the specific lexical

items used to tell a story, or how typical lexical items are compared with a normative sample. For example, when re-telling the Cinderella story, healthy controls may use the lexical items “Cinderella,” “prince,” and “cleaned,” whereas PWAs might say “girl,” “king,” and “worked.” These lexical items may still allow the PWA to communicate the story, but with greater risk of miscommunications or breakdowns, or greater effort on behalf of both speaker and listener. Importantly, scoring CoreLex is quite simple—

<sup>1</sup>Department of Speech Pathology and Audiology, Marquette University, Milwaukee, Wisconsin; <sup>2</sup>Department of Communication Sciences and Disorders, East Carolina University, Greenville, North Carolina; <sup>3</sup>Department of Speech and Hearing Sciences, University of New Mexico, Albuquerque, New Mexico.

Address for correspondence: Sarah Grace Hudspeth Dalton, Ph.D., CCC-SLP, Department of Speech Pathology and Audiology, Marquette University, 604 N

16th St., Milwaukee, WI 53233  
(e-mail: sarahgrace.dalton@marquette.edu).

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individuals receive credit for each lexeme on the checklist that is produced, regardless of the specific form, but excluding synonyms (e.g., if “clean” was a CoreLex item, credit would be received for productions such as “cleaning,” “cleaned,” and “clean,” but not “scrubbing” or “scrubs”). For a detailed discussion of the development of CoreLex measures, please see the article by Kim and Wright.<sup>4</sup>

Indeed, research examining CoreLex indicates that PWAs produce fewer typical lexical items than controls.<sup>5–8</sup> CoreLex has demonstrated sensitivity to age-related differences in neurologically healthy individuals,<sup>9</sup> between healthy individuals and PWAs, and between aphasia subtypes.<sup>7,8</sup> CoreLex also correlated with performance on standardized assessments and other discourse measures.<sup>7–11</sup> For a discussion of additional potential applications of CoreLex, please see the article by Dalton et al.<sup>12</sup>

CoreLex checklists have been reported for a variety of discourse tasks. The majority have been developed using stimuli from the Aphasia-Bank database ([aphasia.talkbank.org](http://aphasia.talkbank.org)). Aphasia-Bank consists of transcripts of healthy controls and PWAs contributed by researchers across the country. All individuals in the database complete a standardized elicitation protocol that includes five semispontaneous speech tasks: two picture sequences (Broken Window, Refused Umbrella), one picture scene (Cat Rescue), one story retell (Cinderella), and one procedural task (how to make a peanut butter and jelly sandwich). The full elicitation protocol and stimuli are described by MacWhinney and colleagues and available on the AphasiaBank website ([aphasia.talkbank.org/protocol](http://aphasia.talkbank.org/protocol)).<sup>13</sup> In addition, CoreLex checklists were recently developed for two wordless picture books (Good Dog Carl, Picnic) classified as story generation tasks, as the stimuli are more complex (like Cinderella), but should be unfamiliar to most (unlike Cinderella).<sup>9</sup> Detailed elicitation instructions for these tasks are available in the article by Kim and Wright.<sup>4</sup>

Unfortunately, these checklists are dispersed throughout the literature<sup>5,8,9,14</sup> or only available as conference proceedings.<sup>6,7,15</sup> Furthermore, CoreLex checklists have been developed by different groups and for different purposes, which means that the results of each checklist may need to be interpreted differently

and/or different checklists should be used for different purposes. This limits the clinical utility of CoreLex, despite it being clinically friendly and informative. The purpose of this article is to provide clinicians with a centralized resource for currently available CoreLex checklists, along with information regarding development, norms, and guidelines for use. This should increase the clinical utility of CoreLex measures, and thereby increase the use of CoreLex and related analyses in research and clinical practice.

## CHECKLISTS

### AphasiaBank Semi-spontaneous Speech Tasks

#### MacWhinney and colleagues—Cinderella

**Task.** MacWhinney and colleagues were the first to suggest that a “target lexicon” could be used to investigate discourse production in individuals with aphasia.<sup>5</sup> They analyzed transcripts of the Cinderella story retell produced by healthy controls and PWAs from the Aphasia-Bank database ([aphasia.talkbank.org](http://aphasia.talkbank.org)). All samples were collected using a standardized elicitation protocol. The sample consisted of 24 PWAs (4 not aphasic by Western Aphasia Battery [NABW], 7 anomic, 6 conduction, 3 Wernicke’s, 3 Broca’s, and 1 transcortical motor) and 25 healthy controls. MacWhinney and colleagues analyzed the samples for the most frequently produced nouns and verbs (collapsing across verb inflections) separately for each group. Normative data are not available for this sample. Results showed that the top-ten nouns and verbs showed a great deal of overlap between the two groups. However, when considering all nouns and verbs that were produced five or more times, PWAs produced half as many items (34 nouns and 36 verbs) as healthy controls (80 nouns and 71 verbs). Closer examination of these lists revealed that PWAs produced fewer abstract nouns and more light verbs in addition to having a more limited repertoire. The authors highlighted that this sample included a relatively large proportion of individuals with mild aphasia and few with more severe aphasia, suggesting that these differences were present even in a sample composed primarily of persons with mild aphasia. See Appendix A for

the top-ten nouns and verbs for Cinderella as reported by MacWhinney and colleagues.<sup>5</sup>

**Fromm and colleagues—Sandwich Task.** Following the methods of MacWhinney et al,<sup>5</sup> Fromm and colleagues identified an “essential lexicon” for the procedural discourse task “how to make a peanut butter and jelly sandwich” (hereafter referred to as Sandwich).<sup>6</sup> Transcripts of 144 healthy controls and 141 PWAs were retrieved from the AphasiaBank database. The authors listed the top-ten nouns and verbs (collapsing across verb inflections but excluding copulas, auxiliaries, and modals) produced by each group, but did not conduct statistical analyses to assess group differences. Both groups produced very similar essential lexicons—the top-ten nouns for both groups were the same, although the frequency of each item differed. Similarly, essential verb lists differed by only two items. See Appendix B for the top-ten nouns and verbs for Sandwich as reported by Fromm and colleagues.<sup>6</sup>

**Dalton and Richardson—All Tasks.** Dalton and Richardson originally developed a CoreLex checklist for the Broken Window picture sequence task using healthy controls from the AphasiaBank database.<sup>8</sup> They selected 92 healthy controls as a normative sample, roughly balanced for sex and education and evenly distributed across four age ranges (20–39, 40–59, 60–79, and 80+). Later, checklists were developed for the Cat Rescue and Refused Umbrella tasks,<sup>15</sup> and the Sandwich checklist was developed for this article. An earlier version of the Cinderella CoreLex list was presented previously,<sup>7</sup> but was updated using the same normative sample and methods as the Broken Window task to ensure comparability. Checklists for all tasks use this same normative sample, with the exception of the Cat Rescue picture description task (see footnote\*). In contrast to previous CoreLex investigations, Dalton and Richardson included all word types (e.g., nouns, verbs, adverbs, adjectives, conjunctions, determiners, and pro-

nouns) for consideration.<sup>8</sup> CoreLex items were defined as lexemes produced by 50% (46) or more of healthy controls in the normative sample. After development of the checklists, transcripts of all healthy controls and PWAs in the AphasiaBank database were scored for production of CoreLex, including individuals NABW. Normative data are available in the supplementary materials of Dalton et al.<sup>12</sup>

Comparisons revealed that PWAs produced fewer CoreLex items for all discourse tasks than healthy controls.<sup>8,12</sup> When healthy controls were compared with each aphasia subtype separately, individuals with anomic, Broca’s, conduction, and Wernicke’s aphasia produced fewer CoreLex items than healthy controls for all tasks. Individuals NABW produced fewer CoreLex items during Broken Window and Cinderella only.<sup>8,12</sup> For the Broken Window and Cinderella tasks, differences among the aphasia subtypes have been examined.<sup>7,8</sup> Results demonstrated that individuals with Broca’s aphasia produced significantly fewer CoreLex items than individuals with anomic, conduction, and Wernicke’s aphasia, as well as individuals NABW; in addition, individuals NABW differed from all other aphasia subtypes for Broken Window production.<sup>8</sup> During production of Cinderella, individuals with Broca’s aphasia produced significantly fewer CoreLex items than individuals with anomic aphasia. Finally, individuals with anomic, Broca’s, and conduction aphasia produced significantly fewer CoreLex items than individuals NABW.<sup>7</sup> See Appendix C for CoreLex checklists for the AphasiaBank stimuli as reported by Dalton and colleagues.<sup>7,8,15</sup>

### Wordless Picture Book Tasks

Kim and colleagues developed CoreLex checklists for the wordless picture books “Good Dog Carl” and “Picnic.”<sup>9</sup> Checklists were developed from samples collected from 470 healthy control speakers, relatively evenly distributed across seven age bins (20s, 30s, 40s, 50s, 60s, 70s, and 80s) and approximately matched for sex and education. Separate checklists were created for four word types (nouns, verbs, adjectives, and adverbs), given conflicting evidence that PWAs experience differential impairment of production of word types during discourse.<sup>16–19</sup> Kim and colleagues

\*Five healthy controls in the Broken Window normative sample did not complete the Cat Rescue task due to a change in the standardized AphasiaBank elicitation protocol. Therefore, for the Cat Rescue normative sample only, five alternate controls matched for age, gender, education, and length of Broken Window production were included instead.

sought to develop checklists that would be sensitive to changes in lexical retrieval due to normal aging processes. Therefore, checklists were created for each word type by age bin, yielding 28 CoreLex checklists per task, consisting of the 25 most frequently produced nouns, verbs, adverbs, and adjectives within each age range. They also included a sample of 11 PWAs (3 anomic, 5 Broca's, 2 conduction, 1 transcortical motor) to examine how well the CoreLex checklists correlated with overall aphasia severity (measured by Western Aphasia Battery—Revised Aphasia Quotient [WAB-R AQ])<sup>20</sup> and whether performance differed according to fluency. A previous study developed CoreLex checklists of function words for “Good Dog Carl” and “Picnic” using the procedures and methods described earlier.<sup>11</sup> Normative data are not available for these tasks and checklists.

To examine the sensitivity of their CoreLex checklists to age-related changes, Kim and colleagues calculated percent agreement between the items in each list for each age bin.<sup>9</sup> Generally, results showed lower agreement between checklists the farther apart the age groups. Adverb and verb CoreLex checklists had the best agreement across ages for healthy controls, and lower agreement was observed across noun and adjective CoreLex lists. Correlations between CoreLex performance and WAB-R AQ for individuals with aphasia revealed positive correlations between AQ and verb and function word production for both tasks.<sup>9,11</sup> This indicates that the other CoreLex lists (nouns, adverbs, and adjectives) may index some aspect of language performance other than overall severity. Kim and colleagues also examined whether their CoreLex checklists were sensitive to differences between PWAs with fluent and nonfluent subtypes. Results showed that for both stories, individuals with fluent aphasia produced more CoreLex verbs than individuals with nonfluent aphasia.<sup>9</sup>

Additionally, the validity and reliability of all CoreLex checklists developed by Kim and colleagues were examined for the 11 PWAs.<sup>14</sup> In this study, correlations between two macro-linguistic measures (coherence, thematic units), three micro-linguistic measures (information units, syntactic complexity, lexical diversity), and CoreLex scores were computed. Significant

correlations between each word type checklist and some measures were observed; however, which measures were correlated, and the strength and direction of correlations varied depending on the CoreLex word type and task. Function word CoreLex checklists significantly correlated with micro- and macro-linguistic measures and yielded the highest inter-rater reliability of all CoreLex checklists. Further details are available in the article by Kim and Wright.<sup>4</sup> See Appendix D for CoreLex checklists for Good Dog Carl and Picnic stimuli as reported by Kim and colleagues.<sup>9,14</sup>

## DISCUSSION

In this article, we present new and previously developed CoreLex checklists, along with information regarding their development and normative data, when available. CoreLex checklists are made available in the Appendices to provide a single resource for clinicians and researchers, and to improve utilization of these measures. Care should be given when selecting a CoreLex checklist to consider the specific methodological choices made during development (that are described in this article) that may impact use and generalization. For example, Dalton and Richardson sought to develop a single CoreLex checklist for each chosen task that could be applied to individuals across the age span. In contrast, Kim and colleagues sought to develop checklists that were sensitive to differences in word type productions and to changes due to aging. Both approaches are valid and useful, but the resulting checklists should be used accordingly.

## CONCLUSIONS

Despite using slightly different methods to develop CoreLex checklists, various studies highlight the utility of CoreLex to identify differences due to age, presence of aphasia, and type of aphasia.<sup>5,7–12</sup> Critical for consideration of wider utilization, CoreLex may also be related to other discourse measures that are highly informative but less user-friendly due to the greater time required to complete them, as demonstrated by Dalton and Richardson.<sup>8</sup> Combined with other articles in this issue by Kim and Wright<sup>4</sup> and Dalton et al,<sup>12</sup> readers

have access to detailed information about checklist development, potential application of checklists (including extensions to CoreLex efficiency), and the checklists themselves. It is our hope that clinicians and researchers will be able to utilize these measures as appropriate in their practice, with the ultimate goal of increasing the use of meaningful discourse analyses and treatments for persons with aphasia.

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S.G.H.D. receives a salary from Marquette University. She has no other financial or nonfinancial disclosures.

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#### CONFLICT OF INTEREST

None declared.

#### REFERENCES

1. Brady MC, Godwin J, Enderby P, Kelly H, Campbell P. Speech and language therapy for aphasia after stroke: an updated systematic review and meta-analyses. *Stroke* 2016;47(10):e236–e237
2. Dietz A, Boyle M. Discourse measurement in aphasia: consensus and caveats. *Aphasiology* 2018; 32(04):487–492
3. Worrall L, Sherratt S, Rogers P, et al. What people with aphasia want: their goals according to the ICF. *Aphasiology* 2011;25(03):309–322
4. Kim H, Wright HH. A tutorial on core lexicon: development, use, and application. *Semin Speech Lang* 2020;41:20–31
5. MacWhinney B, Fromm D, Holland A, Forbes M, Wright H. Automated analysis of the Cinderella story. *Aphasiology* 2010;24(6-8):856–868
6. Fromm DA, Forbes M, Holland A, MacWhinney B. PWAs and PBJs: language for describing a simple procedure. [Abstract]. *Arch Clinical Aphasiology* 2013. Available at: <http://aphasiology.pitt.edu/id/eprint/2491>. Accessed October 10, 2019
7. Hudspeth SG, Dillow EP, Richardson JD. Core lexicon analysis: efficient assessment of narrative discourse in persons with aphasia. Technical session presented at: Annual American Speech-Language-Hearing Association; November 2013; Chicago, IL
8. Dalton SG, Richardson JD. Core-lexicon and main-concept production during picture-sequence description in adults without brain damage and adults with aphasia. *Am J Speech Lang Pathol* 2015;24(04):S923–S938
9. Kim H, Kintz S, Zelnosky K, Wright HH. Measuring word retrieval in narrative discourse: core lexicon in aphasia. *Int J Lang Commun Disord* 2019;54(01):62–78
10. Kim H, Wright HH. Validity and reliability of the core lexicon analysis. Poster presented at: Clinical Aphasiology Conference; May 2017; Salt Lake City, UT
11. Kim H, Kintz S, Wright HH. Function words in narrative discourse in aphasia. Poster presented at: Clinical Aphasiology Conference; May 2017; Salt Lake City, UT
12. Dalton SGH, Hubbard HI, Richardson JD. Moving towards non-transcription based discourse analysis in stable and progressive aphasia. *Semin Speech Lang* 2020;41:32–44
13. MacWhinney B, Fromm D, Forbes M, Holland A. Aphasiabank: methods for studying discourse. *Aphasiology* 2011;25(11):1286–1307
14. Kim H, Wright HH. Concurrent validity and reliability of the core lexicon measure as a measure of word retrieval ability in aphasia narratives. *Am J Speech Lang Pathol* 2019;1–10. DOI is: [https://doi.org/10.1044/2019\\_AJSLP-19-0063](https://doi.org/10.1044/2019_AJSLP-19-0063)
15. Tanaka T, Branch W, Dalton SG, Richardson J. It's raining cats: further development of discourse checklists for picture description tasks. Poster presented at: Annual American Speech-Language-Hearing Association; November 2016; Los Angeles, CA
16. Kambanaros M. Action and object naming versus verb and noun retrieval in connected speech: comparisons in late bilingual Greek-English anomic speakers. *Aphasiology* 2010;24(02):210–230
17. Mayer J, Murray L. Functional measures of naming in aphasia: word retrieval in confrontation naming versus connected speech. *Aphasiology* 2003;17(05):481–497
18. Pashek GV, Tompkins CA. Context and word class influences on lexical retrieval in aphasia. *Aphasiology* 2002;16(03):261–286
19. Zingeser LB, Berndt RS. Grammatical class and context effects in a case of pre-anomia: implications for models of language processing. *Cogn Neuropsychol* 1988;5:473–516
20. Kertesz A. Western Aphasia Battery–Revised (WAB-R) Pro-Ed. 2007

**Appendix A CoreLex Checklists for the Cinderella Task as Developed by MacWhinney et al<sup>5</sup>**

<b>Nouns</b>				<b>Verbs</b>			
<b>Controls</b>		<b>PWA</b>		<b>Controls</b>		<b>PWA</b>	
1.	Cinderella	1.	Cinderella	1.	Be	1.	Be
2.	Ball	2.	Girl	2.	Go	2.	Go
3.	Prince	3.	Ball	3.	Have	3.	Do
4.	Slipper	4.	Prince	4.	Get	4.	Have
5.	Mother, stepmother	5.	Mother, stepmother	5.	Come	5.	Get
6.	Dress	6.	Home	6.	Do	6.	Say
7.	Daughter, stepdaughter	7.	Man	7.	Say	7.	Know
8.	Fairy	8.	Slipper	8.	Try	8.	Find
9.	Godmother	9.	Shoe	9.	Marry, remarry	9.	Work
10.	Sister, stepsister	10.	Sister, stepsister	10.	Know	10.	Come

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**Appendix B CoreLex Checklists for the Sandwich Task as Developed by Fromm et al<sup>6</sup>**

<b>Nouns</b>				<b>Verbs</b>			
<b>Controls</b>		<b>PWA</b>		<b>Controls</b>		<b>PWA</b>	
1.	Bread	1.	Butter	1.	Put	1.	Put
2.	Butter	2.	Peanut	2.	Get	2.	Get
3.	Peanut	3.	Bread	3.	Take	3.	Take
4.	Jelly	4.	Jelly	4.	Spread	4.	Have
5.	Slice	5.	Sandwich	5.	Have	5.	Spread
6.	Knife	6.	Piece	6.	Cut	6.	Eat
7.	Piece	7.	Knife	7.	Go	7.	Cut
8.	Jar	8.	Side	8.	Open	8.	Make
9.	Side	9.	Slice	9.	Make	9.	Go
10.	Sandwich	10.	Jar	10.	Eat	10.	Like

Source: Reprinted with permission of the author from: Fromm DA, Forbes M, Holland A, MacWhinney B. PWAs and PBJs: Language for describing a simple procedure. [Abstract]. *Arch Clinical Aphasiology* 2013. Available at: <http://aphasiology.pitt.edu/id/eprint/2491>.

**Appendix C CoreLex Checklists for the AphasiaBank Semi-spontaneous Speech Tasks as Developed by Dalton et al**

<b>Broken Window</b>							
1.	A	11.	Kick	21.	Through		
2.	And	12.	Lamp	22.	To		
3.	Ball	13.	Look	23.	Up		
4.	Be	14.	Of	24.	Window		
5.	Boy	15.	Out				
6.	Break	16.	Over				
7.	Go	17.	Play				
8.	He	18.	Sit				
9.	In	19.	Soccer				
10.	It	20.	The				

Source: Reprinted with permission of the publisher from: Dalton SG, Richardson JD. Core-lexicon and main-concept production during picture-sequence description in adults without brain damage and adults with aphasia. *Am J Speech-Language Pathol* 2015;39(11):1125-1137. [https://doi.org/10.1044/2015\\_AJSLP-14-0161](https://doi.org/10.1044/2015_AJSLP-14-0161).

**Refused Umbrella**

1.	A	11.	Home	21.	Say	31.	Umbrella
2.	And	12.	I	22.	School	32.	Walk
3.	Back	13.	In	23.	She	33.	Wet
4.	Be	14.	It	24.	So	34.	With
5.	Boy	15.	Little	25.	Start	35.	You
6.	Do	16.	Mother <sup>a</sup>	26.	Take		
7.	Get	17.	Need	27.	That		
8.	Go	18.	Not	28.	The		
9.	Have	19.	Out	29.	Then		
10.	He	20.	Rain	30.	To		

Source: Reprinted with permission from the authors from: Tanaka T, Branch W, Dalton SG, Richardson J. It's raining cats: Further development of discourse checklists for picture description tasks. Poster presented at: Annual American Speech-Language-Hearing Association: November, 2016; Los Angeles, CA.

<sup>a</sup>Because there is such wide variability in how the lexeme "mother" is produced, essentially any diminutive form was accepted (e.g., ma, mom, mommy, mama, mother).

**Cat Rescue**

1.	A	11.	Down	21.	Little	31.	Tree
2.	And	12.	Father <sup>a</sup>	22.	Not	32.	Up
3.	Bark	13.	Fire	23.	Out	33.	With
4.	Be	14.	Get	24.	She	34.	Fireman
5.	Call	15.	Girl	25.	So		
6.	Cat	16.	Go	26.	Stick		
7.	Climb	17.	Have	27.	The		
8.	Come	18.	He	28.	Their		
9.	Department	19.	In	29.	There		
10.	Dog	20.	Ladder	30.	To		

Source: Reprinted with permission from the authors from: Tanaka T, Branch W, Dalton SG, Richardson J. It's raining cats: further development of discourse checklists for picture description tasks. Poster presented at: Annual American Speech-Language-Hearing Association; November 2016; Los Angeles, CA.

<sup>a</sup>Because there is such wide variability in how the lexeme "father" is produced, essentially any diminutive form was accepted (e.g., pa, pop, dad, daddy, father).



**Cinderella**

1.	A	21.	Do	41.	I	61.	One	81.	This
2.	After	22.	Dress	42.	In	62.	Out	82.	Time
3.	All	23.	Ever	43.	Into	63.	Prince	83.	To
4.	And	24.	Fairy	44.	It	64.	Pumpkin	84.	Try
5.	As	25.	Father <sup>a</sup>	45.	Know	65.	Run	85.	Turn
6.	At	26.	Find	46.	Leave	66.	's <sup>b</sup>	86.	Two
7.	Away	27.	Fit	47.	Like	67.	Say	87.	Up
8.	Back	28.	Foot	48.	Little	68.	She	88.	Very
9.	Ball	29.	For	49.	Live	69.	Shoe	89.	Want
10.	Be	30.	Get	50.	Look	70.	Sister	90.	Well
11.	Beautiful	31.	Girl	51.	Lose	71.	Slipper	91.	When
12.	Because	32.	Glass	52.	Make	72.	So	92.	Who
13.	But	33.	Go	53.	Marry	73.	Strike	93.	Will
14.	By	34.	Godmother	54.	Midnight	74.	Take	94.	With
15.	Cinderella	35.	Happy	55.	Mother <sup>a</sup>	75.	Tell		
16.	Clock	36.	Have	56.	Mouse	76.	That		
17.	Come	37.	He	57.	Not	77.	The		
18.	Could	38.	Home	58.	Of	78.	Then		
19.	Dance	39.	Horse	59.	Off	79.	There		
20.	Daughter	40.	House	60.	On	80.	They		

<sup>a</sup>See notes regarding acceptable options for the lexemes "father" and "mother" in Refused Umbrella and Cat Rescue checklists.

<sup>b</sup>possessive morpheme "s".

**Sandwich**

1.	A	11.	One	21.	Then
2.	And	12.	Other	22.	To
3.	Bread	13.	Out	23.	Together
4.	Butter	14.	Peanut	24.	Two
5.	Get	15.	Piece	25.	You
6.	It	16.	Put		
7.	Jelly	17.	Slice		
8.	Knife	18.	Spread		
9.	Of	19.	Take		
10.	On	20.	The		

### Appendix D CoreLex Checklists for Good Dog Carl and Picnic as Developed by Kim and Colleagues<sup>4</sup>

#### Good Dog Carl (20s)

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Baby	Go	Good	Then	The
2.	Dog	Get	Little	Back	And
3.	Carl	Put	Back	There	To
4.	Mother	Look	Hungry	Just	Be
5.	Mom	Take	Big	All	They
6.	Crib	Come	Messy	Where	A
7.	Bed	Have	Open	Upstairs	He
8.	Back	Play	Sure	Up	In
9.	Room	Make	Own	Out	On
10.	Laundry	Run	Left	Down	Of
11.	Mess	See	Dirty	Away	Some
12.	Chute	Decide	Happy	Next	That
13.	Milk	Leave	Nice	Very	So
14.	Bread	Say	Huge	In	Him
15.	Home	Clean	Next	Now	Into
16.	Window	Eat	Right	Again	With
17.	Time	Let	Able	Also	She
18.	Child	Turn	Hot	Around	It
19.	Butter	Dry	Dangerous	So	His
20.	Cookie	Do	First	Shortly	Her
21.	Bath	Know	Great	On	For
22.	Kitchen	Watch	Long	More	Up
23.	Grape	Find	Ready	How	As
24.	Fishtank	Ride	Young	Once	After
25.	Soap	Dance	Early	As	Have

#### Good Dog Carl (30s)

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Baby	Go	Little	Then	The
2.	Carl	Get	Good	Back	And
3.	Dog	Put	Clean	All	Be
4.	Crib	Take	Back	There	To
5.	Mom	Make	Hungry	Up	A
6.	Bed	Run	Big	Upstairs	They
7.	Back	Have	Open	Now	He
8.	Laundry	Come	Great	Away	In
9.	Room	Decide	Sure	Where	On
10.	Mother	Play	Nice	Out	Of
11.	Milk	See	Happy	Just	So
12.	Time	Watch	Ready	So	That
13.	Mess	Clean	Messy	Next	With
14.	Window	Leave	Dirty	On	She
15.	Bread	Dance	Tired	Down	Some
16.	Cookie	Jump	Left	Off	Into
17.	Chute	Turn	Next	Very	Him
18.	Home	Ride	Smart	In	For

(Continued)

19.	Butter	Let	First	Shortly	It
20.	Kitchen	Dry	Right	Sure	His
21.	House	Say	Whole	Again	Her
22.	Chocolate	Know	Awesome	Over	Up
23.	Grape	Eat	Huge	Really	I
24.	Bath	Wash	Old	Around	As
25.	Floor	Find	Pretty	Soon	Down

**Good Dog Carl (40s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Baby	Go	Little	Then	The
2.	Carl	Get	Good	Back	And
3.	Dog	Put	Hungry	There	Be
4.	Crib	Look	Back	Up	To
5.	Back	Have	Big	All	A
6.	Bed	Take	Clean	Just	He
7.	Mom	Come	Dry	Now	They
8.	Laundry	Play	Messy	Upstairs	On
9.	Mother	Run	Great	Out	In
10.	Milk	Make	Sure	Very	Of
11.	Room	See	Dirty	Where	Some
12.	Chute	Let	Happy	Away	Into
13.	Window	Know	Nice	Down	So
14.	Mess	Say	Fun	In	Him
15.	Bread	Clean	Old	On	With
16.	Chocolate	Watch	Next	Around	Her
17.	Time	Ride	Ready	Here	His
18.	Cookie	Decide	Right	Over	She
19.	Floor	Leave	First	Off	It
20.	Kitchen	Do	Safe	Next	That
21.	Soap	Open	Whole	Again	For
22.	Butter	Climb	Wonderful	Right	Up
23.	Home	Find	Bad	Apparently	I
24.	Grape	Lay	Full	Shortly	As
25.	Fishtank	Jump	Gentle	Together	Out

**Good Dog Carl (50s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Baby	Go	Little	Then	The
2.	Carl	Get	Good	Back	And
3.	Dog	Look	Big	There	Be
4.	Bed	Put	Hungry	Up	To
5.	Mother	Take	Sure	All	A
6.	Crib	Have	Messy	Just	He
7.	Back	Clean	Open	Now	They
8.	Mom	Come	Next	Upstairs	On
9.	Laundry	Play	Fun	Out	In
10.	Milk	See	Dirty	Where	Of
11.	Room	Make	Right	On	So
12.	Window	Ride	Left	Here	Into
13.	Mess	Say	Ready	In	That

14.	Chute	Decide	Smart	So	It
15.	Cookie	Run	Own	Away	Some
16.	Time	Turn	Great	Down	With
17.	Bread	Dry	Happy	Next	Him
18.	Powder	Let	Pretty	Shortly	Up
19.	Kitchen	Leave	Nice	Very	She
20.	Floor	Watch	Whole	Again	His
21.	Butter	Know	Wonderful	How	Her
22.	Chocolate	Eat	Close	Off	I
23.	Home	Swim	Excited	Yet	For
24.	Grape	Give	Fine	Over	Like
25.	Fish	Climb	First	Sure	Out

**Good Dog Carl (60s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Baby	Go	Little	Then	The
2.	Dog	Get	Good	Back	And
3.	Carl	Look	Clean	There	Be
4.	Bed	Put	Big	All	To
5.	Back	Take	Dry	Up	A
6.	Crib	Have	Hungry	Just	He
7.	Mother	Come	Open	Now	They
8.	Mom	Run	Happy	Out	On
9.	Laundry	Play	Great	Upstairs	In
10.	Chute	Make	Next	Where	Of
11.	Milk	Decide	Dirty	Very	Him
12.	Mess	Say	Left	In	Into
13.	Powder	See	Nice	So	That
14.	Window	Ride	Old	Down	His
15.	Time	Do	Sure	Probably	It
16.	Bread	Find	First	Over	So
17.	Floor	Watch	Messy	Shortly	With
18.	Butter	Know	Pretty	Off	Some
19.	Cookie	Climb	Smart	Again	She
20.	Chocolate	Clean	Soft	Away	Her
21.	Aquarium	Let	Tired	On	Up
22.	Home	Dance	Able	Around	I
23.	Room	Sit	Close	Also	For
24.	Soap	Swim	Full	Here	Have
25.	Thing	Eat	Whole	Soon	Like

**Good Dog Carl (70s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Baby	Go	Good	Then	The
2.	Dog	Get	Little	Back	And
3.	Carl	Look	Big	There	Be
4.	Back	Put	Next	All	To
5.	Crib	Have	Dirty	Just	A
6.	Bed	Take	Open	Now	He
7.	Mother	Come	Nice	Out	In

(Continued)

8.	Laundry	See	Hungry	Up	They
9.	Window	Clean	First	Again	On
10.	Milk	Say	Old	Upstairs	Of
11.	Powder	Do	Sure	Where	Him
12.	Floor	Know	Wonderful	Over	His
13.	Chute	Turn	Happy	Very	It
14.	Bread	Find	Great	Off	Into
15.	Boy	Sit	Same	Here	That
16.	Mess	Make	Messy	On	With
17.	Mom	Climb	Right	In	I
18.	Kitchen	Watch	Pretty	Shortly	So
19.	Cookie	Play	Cute	So	Some
20.	Butter	Decide	Tired	Down	Up
21.	Chocolate	Dance	Whole	Next	She
22.	Thing	Let	Close	Away	Out
23.	Time	Dry	Smart	Yet	For
24.	Aquarium	Eat	Innocent	How	Have
25.	Puff	Open	Own	Apparently	Her

**Good Dog Carl (80s)**

	<b>Nouns</b>	<b>Verbs</b>	<b>Adjectives</b>	<b>Adverbs</b>	<b>Function words</b>
1.	Baby	Go	Little	Then	The
2.	Dog	Get	Good	Back	And
3.	Carl	Look	Big	There	Be
4.	Back	Put	Next	All	He
5.	Bed	Take	Happy	Up	A
6.	Boy	Have	Dirty	Just	To
7.	Mother	Come	Nice	Now	In
8.	Crib	Play	Great	Out	On
9.	Window	See	Open	Where	They
10.	Laundry	Do	Old	On	Of
11.	Bread	Say	Messy	Down	Him
12.	Milk	Clean	Smart	Again	It
13.	Powder	Know	Sure	Here	His
14.	Floor	Watch	Right	Very	That
15.	Butter	Find	Ready	Upstairs	So
16.	Chute	Straighten	Wonderful	In	Into
17.	Chocolate	Make	Left	So	I
18.	Puff	Ride	Small	Apparent	She
19.	Child	Wash	Wet	Off	With
20.	Cookie	Give	Able	Over	Some
21.	Fish	Open	Whole	How	Her
22.	Head	Let	Close	Shortly	Out
23.	Time	Climb	First	Around	But
24.	Room	Guess	Pretty	Really	For
25.	Thing	Run	Different	Away	At

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**Picnic (20s)**

	<b>Nouns</b>	<b>Verbs</b>	<b>Adjectives</b>	<b>Adverbs</b>	<b>Function words</b>
1.	Mouse	Go	Little	All	The
2.	Family	Get	Stuffed	Back	And
3.	Picnic	Have	Happy	There	Be
4.	Truck	Look	Missing	Then	They
5.	Baby	Start	Lost	Just	To
6.	Road	Eat	Red	Meanwhile	She
7.	Back	Find	Sad	Out	Of
8.	Time	Play	Pink	Where	A
9.	Child	See	Good	Very	Her
10.	Animal	Decide	Big	Still	In
11.	Kid	Come	Hungry	So	That
12.	Berry	Call	Left	Up	Their
13.	Flower	Know	Bumpy	Around	All
14.	Girl	Notice	Ready	Finally	For
15.	Mom	Pick	Excited	Together	He
16.	Rest	Do	Small	Alone	So
17.	Grass	Begin	Scared	Now	One
18.	Day	Drive	Old	Really	Them
19.	Rock	Cry	Same	Off	It
20.	Raspberry	Run	Beautiful	Maybe	On
21.	Dad	Take	Own	Again	Some
22.	Food	Hear	Whole	Behind	Have
23.	Baseball	Hug	Glad	Even	With
24.	Way	Fall	Long	Here	As
25.	Lake	Sit	Nice	Away	At

**Picnic (30s)**

	<b>Nouns</b>	<b>Verbs</b>	<b>Adjectives</b>	<b>Adverbs</b>	<b>Function words</b>
1.	Mouse	Go	Little	Back	The
2.	Picnic	Get	Stuffed	All	And
3.	Family	See	Missing	There	Be
4.	Truck	Have	Happy	Then	They
5.	Road	Find	Pink	Out	To
6.	Baby	Look	Sad	Where	A
7.	Back	Eat	Good	Up	She
8.	Child	Start	Big	Meanwhile	Of
9.	Time	Realize	Lost	Just	Her
10.	Girl	Decide	Hungry	So	In
11.	Kid	Begin	Ready	Still	He
12.	Berry	Come	Bumpy	Around	That
13.	Flower	Run	Whole	Very	For
14.	Animal	Hear	Great	Now	All
15.	Doll	Know	Left	Together	Their
16.	Raspberry	Fall	Excited	Here	So
17.	Grass	Take	Scared	Finally	On
18.	Food	Do	Old	Behind	It
19.	Baseball	Pick	Own	Alone	Some
20.	Rock	Continue	Young	Down	With

21.	Water	Sit	Small	Again	Have
22.	Toy	Give	Beautiful	Once	One
23.	Lunch	Hit	High	Even	His
24.	Mom	Forget	Nearby	Really	Him
25.	Bush	Hug	Nice	On	Where

**Picnic (40s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Mouse	Go	Little	All	The
2.	Picnic	Look	Stuffed	Back	And
3.	Truck	Get	Missing	There	Be
4.	Family	Have	Red	Then	They
5.	Road	Play	Pink	Just	To
6.	Baby	Eat	Happy	Where	Of
7.	Back	Find	Lost	Out	A
8.	Time	Start	Good	Very	He
9.	Berry	See	Big	Up	She
10.	Flower	Realize	Sad	Still	In
11.	Rat	Come	Hungry	So	All
12.	Child	Sit	Small	Around	Their
13.	Animal	Know	Left	Here	That
14.	Rock	Run	Ready	Now	Her
15.	Food	Call	Old	Together	One
16.	Blanket	Cry	Beautiful	Again	For
17.	Bush	Do	Scared	Finally	So
18.	Doll	Take	Nice	Alone	His
19.	Kid	Drive	Whole	Behind	With
20.	Day	Fall	Young	Off	It
21.	Lake	Decide	Great	Suddenly	Some
22.	Grass	Pick	Excited	Away	On
23.	Toy	Lay	Bumpy	Down	At
24.	Lunch	Begin	Poor	On	Them
25.	Area	Notice	Full	Probably	Him

**Picnic (50s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Mouse	Go	Little	All	The
2.	Picnic	Look	Stuffed	Back	And
3.	Truck	Get	Happy	There	Be
4.	Family	Have	Missing	Then	They
5.	Road	Play	Big	Where	To
6.	Baby	Eat	Pink	Out	A
7.	Back	See	Good	Meanwhile	Of
8.	Kid	Find	Sad	Just	She
9.	Child	Start	Lost	So	He
10.	Grandpa	Come	Hungry	Very	In
11.	Mom	Sit	Ready	Up	All
12.	Flower	Call	Whole	Around	Their
13.	Raspberry	Do	Full	Still	Her
14.	Time	Decide	Bumpy	Now	That
15.	Animal	Pick	Left	Here	For

16.	Berry	Realize	Beautiful	Together	With
17.	Toy	Know	Wonderful	Finally	So
18.	Dad	Take	Poor	Maybe	It
19.	Doll	Run	Old	Behind	One
20.	Blanket	Cry	Great	Down	On
21.	Grass	Drive	Small	Really	Some
22.	Food	Think	Nice	Even	His
23.	Grandma	Notice	Tall	Again	At
24.	Day	Hear	Lonely	Off	Them
25.	Way	Continue	Scared	Alone	But

**Picnic (60s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Mouse	Go	Little	All	The
2.	Picnic	Look	Happy	There	And
3.	Truck	Have	Good	Back	Be
4.	Family	Get	Lost	Just	They
5.	Road	Play	Pink	So	A
6.	Baby	Find	Big	Then	To
7.	Time	Eat	Missing	Out	Of
8.	Flower	Start	Stuffed	Very	He
9.	Back	See	Red	Where	In
10.	Mom	Sit	Sad	Up	All
11.	Doll	Come	Hungry	Around	She
12.	Kid	Do	Whole	Still	That
13.	Berry	Take	Great	Meanwhile	One
14.	Dad	Know	Ready	Maybe	Their
15.	Toy	Decide	Poor	Now	His
16.	Grandpa	Cry	Beautiful	Here	It
17.	Child	Pick	Nice	Together	On
18.	Raspberry	Run	Old	Finally	With
19.	Food	Fall	Young	Even	So
20.	Brother	Realize	Bumpy	Down	For
21.	Water	Drive	Left	Really	Her
22.	Baseball	Lay	Full	Off	Some
23.	Bush	Call	Tall	Again	Them
24.	Blanket	Swim	Wonderful	On	Him
25.	Area	Jump	Aware	Probably	Have

**Picnic (70s)**

	Nouns	Verbs	Adjectives	Adverbs	Function words
1.	Mouse	Go	Little	All	The
2.	Picnic	Look	Good	There	And
3.	Truck	Have	Happy	Back	Be
4.	Road	Get	Big	Out	They
5.	Baby	Play	Lost	Then	A
6.	Family	Eat	Missing	Now	To
7.	Time	Seem	Pink	Where	Of
8.	Flower	Find	Red	Up	He
9.	Doll	Sit	Stuffed	So	In
10.	Back	Come	Nice	Still	All



11.	Toy	Start	Sad	Very	She
12.	Berry	Take	Ready	Just	That
13.	Child	Pick	Old	Around	Their
14.	Kid	Know	Poor	Here	It
15.	Basket	Do	Great	Meanwhile	One
16.	Water	Cry	Hungry	Again	With
17.	Grandpa	Decide	Bumpy	Maybe	His
18.	Bush	Lay	Whole	Suddenly	On
19.	Tree	Run	Left	Off	Her
20.	Thing	Call	Full	Down	So
21.	Rock	Realize	Young	Meantime	For
22.	Rest	Fall	Beautiful	Finally	Him
23.	Place	Think	Small	Even	I
24.	Middle	Swim	Wonderful	Together	Them
25.	Girl	Hear	Glad	On	Some

**Picnic (80s)**

	<b>Nouns</b>	<b>Verbs</b>	<b>Adjectives</b>	<b>Adverbs</b>	<b>Function words</b>
1.	Mouse	Go	Little	There	And
2.	Picnic	Have	Lost	All	The
3.	Truck	Look	Big	Then	Be
4.	Road	Get	Good	Back	They
5.	Baby	Play	Happy	Out	A
6.	Family	Eat	Ready	Just	To
7.	Flower	Come	Red	Where	Of
8.	Toy	See	Missing	Still	He
9.	Time	Find	Pink	So	In
10.	Back	Sit	Poor	Up	All
11.	Mother	Know	Sad	Here	One
12.	Food	Take	Old	Now	That
13.	Basket	Start	Bumpy	Around	It
14.	Picture	Pick	Great	Very	With
15.	Thing	Cry	Nice	On	Their
16.	Baseball	Decide	Wonderful	Meanwhile	Them
17.	Water	Think	Beautiful	Down	Him
18.	Berry	Do	Whole	Even	On
19.	Rock	Guess	Hungry	Maybe	I
20.	Place	Hug	Stuffed	Off	His
21.	Watermelon	Lay	Glad	Again	So
22.	Doll	Fall	Pretty	Apparently	Some
23.	Home	Jump	Next	Along	For
24.	Banjo	Swim	Full	Away	She
25.	Child	Put	Small	Ever	But

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