Biblio Vocabulary Test summaries (sorted by year of publication) - see [Biblio Vocabulary Test](https://docs.google.com/spreadsheets/d/1Pqdb4mTVkv1L2pOKikYWxgx2x0RZ90LZYYsmc9EEx4g/edit#gid=0) for the full list

**Friend, M. y Keplinger (2003) An infant-based assessment of early lexicon acquisition Behavior Research Methods, Instruments, & Computers 2003, 35 (2), 302-309.**

***Summary by AC - 2016-01-16***

* motivates CCT because few tests on comprehension for young kids, distractible
* explains the program & says free for download
* contains description of stimuli but no specifics regarding how this list was built
* auditory stimuli are just for feedback on touch (which also results in animation)
* prompts are provided by the experimenter
* experimenter can also touch hidden button to skip or repeat trial
* and further trigger the RE-presentation of a third of the trials for reliability purposes (two modalities, switch side versus leave as is)
* they use videotapes to be able to tease apart correct answers (touch to target) from ambiguous ones (touch to target then touch to distractor)
* “preliminary” data presented from 12 16mo children tested with CCT and picture book
  + there are a lot more trials attempted for CCT -- most of these are correct (i.e., it’s more interesting and “easier”?)
  + %correct reflects intended difference between easy (.65) and moderate (.42)
  + unclear to me that difference bet moderate and hard comes out in aggregate scores: .42 versus .37
  + I’m also puzzled about the very low scores -- chance level is 50% so how can their score be 37%??
  + it’s admitted that the choice of easy/mod/hard based on parental report may be an issue
  + also analyzed what happens with the repeated trials -- not summarizing because not relevant for us
  + reliability reported for 6 kids, which is excellent: (r = .828).

**Friend, M. y Keplinger (2008) Reliability and Validity of the Computerized Comprehension Task (CCT): Data from American English and Mexican Spanish Infants. Journal of Child Language, 35, 77-98, Journal of Child Language, 35, 77-98.**

***Summary by AC - 2016-02-15***

* Note: no mention of attrition d/t parental non-compliance…
* **Study 1:** CDI, CCT, CB (=comprehension book) on 20 kids @ 16m and 20 kids @ 20m, + short term test-retest
  + Mixed within/between design (i.e., in each session, CB or CCT administered) in 2 testing sessions 1 week apart
  + CDI: long form, completed 1 week before the test (??)
  + CCT:
    - NB! “There were equal numbers of easy (comprehended by more than 66% of infants at 16;0), moderately difficult (comprehended by 33-66% of infants at 16;0), and difficult word pairs (comprehended by less than 33% of infants at 16;0; Dale & Fenson, 1996). The word pairs were matched on difficulty and word class (nouns, verbs, and adjectives). To some extent, difficulty and word class overlap but they do so imperfectly. Difficult words are more likely to include verbs and adjectives (but also unfamiliar nouns, e.g., giraffe) and easy words are more likely to include nouns (but also familiar verbs, e.g., hugging).”
    - 41 items 🡪 targets & competitors balanced across two forms
    - ***For nouns, “Where’s the \_\_\_? Touch \_\_\_”;***
    - ***For verbs, “Who’s \_\_\_? Touch \_\_\_”; and***
    - ***For adjectives, “Which one is \_\_\_? Touch \_\_\_.”***
    - Matched frequency of left/right target presentation
    - Images matched on color, size & brightness
    - + 4 practice trials at the beginning
    - test+retest: kids who were attentive through the last test trial get 1/3 of the items again; at this point, images appear on opposite left-right orientation (relative ot prior test trials), keeping 1/3 of each difficulty, and maintaining relative proportions of N, V, Adj
  + CB
    - Exactly same materials as above, but in book form
  + Parents: kid seating on parent’s lap; parent wore dark glasses whose lenses were covered in black cardboard and a pair of headphones over which music played
  + Coding: correct or incorrect if there was an overt action. If no response 🡪 trial missing. On the CCT, infants sometimes gave equivocal responses (touch both at same time or in quick succession) 🡪 coded as ambiguous.
  + Results:
    - Main effect of age in all.
    - More trials, more active trials (i.e. with overt response), and more correct trials in CCT than CB, and this without interaction with age.
    - Higher proportion of infants above chance with CCT than CB
    - Higher proportion above chance for nouns, & easy trials.
    - 24 infants (8 16mo and 16 24mo) stayed for the retest; correlation was .7
    - Correlation with CDI was .64
* **Study 2**: 14 16mo infants tested 4m later to evaluate stability of performance
  + Kids increased significantly in proportion correct, but not in number of trials corrected
  + Within session test retest for CCT was .76
  + Correlation across 4m was .56 (.61 when one “outlier” is removed)
  + Correlation between CCT at this age and CDI at this age not significant
* **Study 3**: CCT adaptation to Mex Sp, CDI, +test-retest
  + Methods
    - 17 Mex-Sp learners 16-18m recruited in Tijuana & San Diego (8 & 9 respectively), slightly more English exposure in the latter (74% versus 94%)
    - Parents completed CDI with a trained experimenter
    - Infants seated on parent’s lap in quiet darkened room, in medical office in Tijuana and lab in San Diego. Mention only of dark glasses this time.
    - Pilot testing revealed these kids needed further warmup, achieved by allowing them to finger paint on the touchscreen before test started
    - 4 familiarization trials
    - 41 paired items designed similarly to above (but not a perfect overlap)
  + Results
    - Mex-Sp kids attempted fewer trials than American-English peers, & they were correct less often
    - Similar proportions in terms of kids being above chance per category
    - 6 infants did the retest, correlation not reported other than “positive and strong”
    - correlation with CDI was not significant

**Friend, M., Schmitt, S. & Simpson, A. (2012) Evaluating the Predictive Validity of the Computerized Comprehension Task: Comprehension Predicts Production Developmental Psychology. 48(1):136-48. DOI: 10.1037/a0025511**

***Summary by AC - 2016-02-15***

* **Study 1**: basically, just an extension of previous work with a more mixed SES sample?
* 57 kids 16-21 months; 7 excluded dt parental non-compliance, technical failure, infant fussiness
* All participants provided data on maternal education, 42 on income, 49 on second lang (38% of kids exposed to second language)
* Important: “maternal education, in particular, has been linked to reporting differences on the CDI (Feldman et al., 2000), to parent language practices (Hart & Risley, 1995; Hoff & Tian, 2005; cf. Vernon-Feagans et al., 2008), and to child language outcomes (Beitchman et al., 2008; Hoff & Tian, 2005)” – so even though they have income for most, a focus is still on maternal ed
* CDI-WG1 for all kids percentiles up to 20-21 m (though not normed for these ages!!!)
* Task explained again; of interest to us: task developed for 16mo but has “hich ceiling” and can be used productively at 20-21m (no citation)
* Mixing difficulty levels to keep kids engaged
* Side randomized with restriction that targets appear no more than twice in succession on same side (see Hirsh-Pasek & Golinkoff 1996’s book)
* Trials time out after 7 seconds
* **!! If child failed to produce a response on two consecutive trials, the experimenter touches right object for child**
* test-retest available for 31 kids r=.69
* item-level agreement CDI-CCT: .54 (although unclear to me how this was calculated because a MEAN is given); similar numbers breaking down by word-level category
* correlation with age much stronger for CDI (.52) than CCT (.29)
* The results are confusing. Fist it’s stated: No sig relation between ANY demographic variable (age, sex, mat ed, family income, second lang) and comprehension vocab scores in both CDI and CCT. But then there are 2 regression analyses:
  + CDI: age but not maternal ed
  + CCT: both age and maternal ed
  + Table 2 shows why results are messy: jumps all over the place!!! Probably not enough kids in each group…
* Yikes – then they report as “convergent validity” a partial correlation CDI 🡪 CCT but not vice versa…
* **Study 2**: 25 kids returned to lab at some point between 24 and 41 months of age; 1 kid’s recording lost
* CDI-WS
* Recording: 10 min toy play + 10 min picture book reading. 2 independent coders; agreement interrater established on an utterance-by-utterance basis equal or greater than .8 for 10% of participants (N=3).
* Extracted MLU in morphemes (including all complete & intelligible utterances) and number of unique word roots (both from above, and another from first 50 utterances).
* For 3 kids, even combining toy play + book sample wasn’t enough to reach 50 complete and intelligible utterances.
* All analyzed in SALT
* Given small sample, they say, no demographic analyses but they also state “no striking demographic differences” – so which is it, have you or have you not conducted these analyses??
* Both CDI and CCT at younger age predict CDI and MLU at later age; but only CCT predicts word root diversity; and only CCT predicts CDI at the later age when controlling for younger CDI & age (the MLU & word root diversity are not sig in the partial correlations).

**Hendrickson, K., & Friend, M. (2013). Quantifying the relationship between infants’ haptic and visual response to word-object pairings. In Proceedings of the... Annual Boston University Conference on Language Development. Boston University Conference on Language Development (Vol. 37). NIH Public Access.**

***Summary by AC - 2016-02-15***

* 49 kids 16 to 18mo
* test booth, kid 30cm from screen, parents both blind & deaf
* more details on the familiarization phase:

The study began with four training trials containing highly familiar noun pairs to insure participants understood the nature of the task. During the training phase, participants were presented with noun pairs and prompted by the experimenter to touch one of the images. If the child failed to touch the screen after repeated prompts, the experimenter touched the target image for them. If a participant failed to touch during training, the four training trials were repeated once. Only participants who executed at least one correct touch during the training phase proceeded to the testing phase.

* More details in the test phase – we had seen most of them before, and the only thing new is that there is mention that the auditory reinforcement is appropriate to the lexical item – but I don’t understand how this is done for verbs or adjectives??? And how about thins like “witch” and “cangaroo”????
* Still not clear whether screen is horizontal or vertical, where camera is – yes! Figure 1 shows that screen is vertical, and camera for eye-tracking is centered above screen, another camera further up to record haptic responses; experimenter is to the side and provides probe; loudspeakers for the contingency sounds
* Two coders separately noted
  + Coder 1: onset & offset of target word & side of correct trial,
  + Coder 2: (blind to 1’s coding) gaze & haptic behavior
* Classified trials on the basis of haptic behavior as “target”, “distractor”, and “no touch”.
  + Looking duration to correct object is above chance for Target and no touch (higher for target than no touch), & below chance for D.
  + Number of shifts is LOWER for no-touch than target or detector (weird…)

**Hendrickson, K., Mitsven, S., Dubois P., Zesigel, P.,., Friend, M. (2014) Looking and touching: what extant approaches reveal about the structure of early word knowledge Developmental Science, 1-13.**

***Summary by AC - 2016-02-15***

* 61 kids included, all >80% English (lang exposure with lang exp questionnaire, bosch & seb-gal 2001)
* 7 excluded dt excessive fussiness, experimenter error & technical error
* test booth, 51 cm touchscreen – same setup as 2013 paper
* More details on piloting & automatization:

Pilot data using the automated version showed that children’s interest in the task waned to such an extent that attrition rates approached 85% (attrition rates using the experimenter-controlled CCT are between 5 and 10%; M. Friend, personal communication, 17 June 2014; P. Zesiger, personal communication, 21 May 2014). !!! they are coauthors both of them!!!!!!!

* Mentions “strong internal consistency (Form A a = .836; Form B a = .839)” 🡨 we should do this analysis too
* New details on the task:

During the training phase, participants were presented with early-acquired noun pairs (known by at least 80% of 16- month-olds; Dale & Fenson, 1996) and prompted by the experimenter to touch the target. If the infant failed to touch the screen after repeated prompts, the experi- menter touched the target image for them. If a partic- ipant failed to touch during training, the four training trials were repeated once. Only participants who exe- cuted at least one correct touch during the training phase proceeded to the testing phase.

* Important for response times: the experimenter advances the slide such that the appearance of the images happens just after the onset of the word (!) in the first utterance
* Further details on when to stop testing:

The criterion for ending testing was a failure to touch on two consecutive trials with two attempts by the experimenter to re-engage without success. If the attempts to re-engage were unsuccessful and the child was fussy, the task was terminated and the responses up to that point were taken as the final score. However, if the child did not touch for two or more consecutive trials but was not fussy, testing continued.

* Also completed CDI-WG
* More details on the sound & gaze coding, which are not relevant to us – just bear in mind that only distractor-initial trials count for looking behavior, which is weird given that the images appear AFTER the onset of the word, so these should be few…
* I’m amazed – LTs are interpreted just as in other experiments, when both images are present before the onset of the word!!! Oh well. They analyze 400-2000 ms, the end because they focus on actions “before the decision to touch” (mind reading??)
* 16 kids removed because they didn’t have data for the three haptic conditions
* Results:

The average time to execute a haptic response was **3896.25** ms post image onset (< 14% of trials included a haptic response prior to 2000 ms). The average visual RT to shift to the target across haptic types was **862.43** ms, comparable to the mean visual RT found in similarly aged participants in previous research (827 ms; Fernald et al., 1998).

Infants chose the **target image on 11.78 trials** (SD = 6.76), the distractor on **10.08** trials (SD = 4.30), and provided no haptic response on **13.03 trials** (SD = 7.78).

* Test-retest on 43 kids, .74
* internal consistency: Form A a = .931 and Form B a = .940
* Slight side bias (but what are the dfs in these analyses???):

no significant difference in number of touches, t(88) = 1.8, p = .08, or amount of looking time, t(88) = 1.5, p = .13, to images presented on the left relative to the right.

* The key new findings in this paper are:
  + no differences in RT across correct and incorrect touch trials, with longer RTs for no touch trials;
  + significant correlation between haptic responses & CDI; and – the next finding being weird -- between haptic responses and RTs for word parents reported the child to know (but not sig though negative when “all” words are taken into account) BUT this correlation is (surprisingly) positive when number of trials is taken into account and negative (as would have been expected) when proportion is considered
  + proportion correct looking not analyzed, but it looks from 2 that it is clearly higher for target touch than other two, and probably not sig diff from chance in the other two – although perhaps this has to do with the fact that only distractor-initial trials are analyzed?

**Poulin-Dubois, D., Bialystok, E., Blaye, A., Polonia, A., & Yott, J. (2013). Lexical access and vocabulary development in very young bilinguals. International Journal of Bilingualism, 17(1), 57-70.**

***Summary by AC - 2016-02-15***

* 75 kids tested 23-26 months:
  + excluded fussiness (9), L1 neither Eng nor Fr (5) noncompliance or inability to complete testing or questionnaires (7), not meeting lang criteria (11)
  + 43 split into 18 mono (90% or more); 25 bilinguals (exposed to L2 from birth), with 25-49% exposure to L2 except 3 exposed 18-25% -- used the LEQ in interview format
* CDI-WS, CCT
* New details on procedure

During the test phase, if the child did not respond within the first 7 s, the reaction time was not recorded. In addition, if a child responded in less than 300 ms, that trial was excluded from the analysis because it was considered to be an anticipatory response. This was done to ensure that the participant did not respond arbitrarily to the question. This task lasted approximately 10 min, and only children who responded to more than half of the 41 trials were included in the final analysis.

* no difference bet/ groups in N of trials excluded, proportion correct out of attempted, accuracy by category; there is an analysis with translation equivalents
* CCT-CDI production correlations .64 (bi) and .59 (mono)

**Deanda, S., Arias Trejo, N., Poulin Dubois, S., Zesiger, P., Friend, M (2015) Minimal second language exposure, SES and early Word comprehension. New evidence from a direct assessment. Bilingualism: Language and Cognition 1-19.**

***Summary by AC - 2016-02-15***

* Study 1: 72 kids 15 to 18 months, LEQ over the phone for language exposure – primarily Am English learners
  + incidentally, let us not forget that ALL papers up to this one mention that this is part of a larger longitudinal grant – so particularly when numbers such as test-retest reliability are reported, one should bear in mind that these are NOT independent samples (they are NESTED samples)
  + New info on procedure

The CCT begins with 4 training trials with no time limit. If the child touches the screen at least once, whether to the target or the distractor, the child moves on to the test phase after the 4 training trials. However, **any incorrect touch during the training trials is followed by a correct touch to the target by the experimenter to model the desired response**. If no touch has been made after **repeating the training phase a second time**, the child does not continue on to the test phase. All children proceeded to the test phase.

* + Contains explanation as to why they use only maternal ed (p. 9 of pdf) 🡪 median split (yikes!) ‘supported by early brain devt differences’… *Noble, K. G., Houston, S. M., Kan, E., & Sowell, E. R. (2012). Neural correlates of socioeconomic status in the developing human brain. Developmental Science, 15, 516–527.*
  + Correlations with CDI r(72 !!!!)= .38 comprehension, .35 production (within CDI, comprehension & production .67)
  + Internal consistency .91 and .95 for forms A and B
  + Analyses declared instrument, lang exposure, and SES. Found sig main effect of language exposure; sign interaction of SES & instrument because SES differences in CCT but not CDI – but this is only because of the alpha adjustment!!!!! Yikes yikes yikes
* Study 2: minimal English exposure in US N=34 + Spanish monolinguals in US N= 16, 24 in Mex
  + Used same cutoff of years of ed as in study 1
  + Unclear pattern of correlations CCT-CDI: CDI-perception & production correlated at .5; but I think they are saying that CCT is not correlated significantly with either.
  + But good internal consistency, they state: it looks like form A is .77 here; form B >.9
  + Main effect of language exposure but no effect of SES – so they compare top and bottom third, and still find no effect in any of the measures; they even looked at income within the US sample (notice footnote saying that in Mexico such a question is “culturally inappropriate”), and still found no relationship.
  + Crucial citations for us:

“the culture of parenting in Spanish-speaking families overrides effects of SES on early acquisition”

“at least two prior studies converge with our findings using different SES metrics and different measures of vocabulary. In one study, Hurtado et al. (2008) found no relations between the Hollingshead Index (a comprehensive measure of SES that includes maternal education) maternal input, and vocabulary size in 18- and 24-month-old Spanish- speaking children. This suggests that the influence of SES may emerge later, if at all, for Spanish-speaking to English-speaking children, as significant SES effects on vocabulary are found at both 18 and 24 months in English speakers (Hurtado et al., 2008; Fernald et al., 2013). In another set of studies, Jackson-Maldonado et al. (1993) found no significant relation between a number of SES variables (including maternal education) and rate of lexical development as measured on the IDHC in Spanish-speaking children between 8 and 31 months of age.”

“Although research suggests that SES effects are mediated by maternal input (Hart & Risley 1995; Hoff, 2003; Hoff & Tian, 2005), such a relation might not emerge across cultures. Consider, for example, that differences in maternal gesture and language are observed across ethnic groups even when controlling for maternal education (Tamis-LeMonda, Song, Leavell, Kahana-Kalman & Yoshikawa, 2012). Thus cultural differences in maternal input contribute variance that is unrelated to SES.

There is also evidence to suggest that parenting practices and knowledge of child development differ across cultures, and that this accounts for differences in language acquisition (Tamis-LeMonda & Kahana- Kalman, 2009; Rowe, 2008). Indeed, Mexican immigrant parents encourage obedience and collaboration more so than verbal communication and independence (Kayser & Guiberson, 2008; Greenfield, Trumbull, Keller, Rothstein- Fisch, Suzuki & Quiroz, 2006). As a consequence, we might expect to see variability in acquisition, particularly early in development, due to variability in maternal interaction style that is unrelated to SES but that has implications for language input.”

**LEGACY, J., ZESIGER, P., FRIEND, M., & POULIN-DUBOIS, D. I. A. N. E. (2015). Vocabulary size, translation equivalents, and efficiency in word recognition in very young bilinguals. Journal of child language, 1-24.**

**Frank, M. C., Sugarman, E., Horowitz, A. C., Lewis, M. L., & Yurovsky, D. Using Tablets to Collect Data from Young Children. manuscript**

**Vogt, P., Mastin, J. D., & Aussems, S. (2015). Early Vocabulary Development in Rural and Urban Mozambique. *Child Development Research*, 189195.**

* Detailed incredibly useful description of development of locally adapted CDI
* First step was authors & informants went through the short CDI English (113 items) and translated into the three main local languages (Portuguese, Ronga, Changana). The short form was used because the checklist was intended to be filled in orally (large proportion of illiterates in the area) so it could not be too long
* The 38 items that were culturally inappropriate were replaced with another that was the same syntactic category and more or less same semantic category
* When doing replacement, they could not always match the likely validity of one item across urban and local population. But if one item was more frequent in one group, they tried to include another item that was more frequent in the other group.
* They then checked again with another group of informants, who confirmed all the items but 2. They nonetheless kept these 2 items as a check.
* During data collection, they noticed that some of the research assistants asked for 5 items in ambiguous ways (e.g. sound effects confused with actions). Those 5 items were removed from consideration.
* Finally, administered in 3 villages + 2 urban suburbs, 1 research assistant in each site. Collected both expressive & receptive scores.
* Collected also brief questionnaire: DOB; number of household members; number of children in the home; maternal education (years); child had health related problems (problems during pregnancy, child born prematurely, child had vision or hearing problems – including ear infections--, child had been hospitalized or seriously ill for a prolonged period of time); whether there was a secondary caregiver; who was secondary caregiver (sibling or adult); other languages spoken.
* 724 mothers interviewed, kids 12-25 months.
* 87 responses were removed (not explained why).
* A further 71 removed because of missing items, incomplete demographic, or primary language different from the 3 used in the creation of the forms
* 16 forms removed because extreme outliers (exceptionally high scores on expressive for youngest children)
* Assistants trained – questionnaire then checklist. In checklist, they ticked “produced”, “comprehended” or “neither”. At the end, interviewee signed (or X’d) form.
* Validation study against children’s production (14 kids in each community), with child recorded at 13, 18, and 25 months. The Spearman correlation between total number of items “produced” in the checklist and total number of lexical types in the recordings was about .5 at each age (significant).
* The results for expressive & comprehension vocabulary are very different: age, gender & location matter a lot in both; maternal years of ed a little in expressive but not in comprehension; having a sibling secondary caregiver was negative in expressive but positive in comprehension… but overall, in both, the biggest predictors were age, & location.
* Of most interest to us, even though they attempted to make their CDI valid in both urban & rural setting, nonetheless, rural kids comprehended 19% fewer words than their urban peers.

**Gurteen PM, Horne PJ, Erjavec M. Rapid word learning in 13- and 17- month-olds in a naturalistic two-word procedure: Looking versus reaching measures. Journal of Experimental Child Psychology. 2012; 109(2):201–217.**

**Tamis-LeMonda, C. S., Song, L., Leavell, A. S., Kahana- Kalman, R., & Yoshikawa, H. (2012). Ethnic differences in mother–infant language and gestural communications are associated with specific skills in infants. Developmental**

**Science, 15, 384–397.**

**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.**

**Friend,M.,&Zesiger,P.(2011).Unereplicationsystematique des proprietes psychometriques du Computerized Compre- hension Task dans trois langues. Enfance, 2011 (3), 329–344.**

**Cannot be retrieved**

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**Doesn’t matter, probably**

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