

**Cross-linguistic metaphor priming in ASL-English bilinguals:
Effects of the Double Mapping Constraint**

Franziska Schaller ^{1,2}

Brittany Lee ³

Zed Sevcikova Sehyr ³

Lucinda O'Grady Farnady ³

Karen Emmorey ³

¹ Experimental Neurolinguistics Group, Bielefeld University, Universitaetsstrasse 25, 33615
Bielefeld, Germany

² Cluster of Excellence "Cognitive Interaction Technology", Bielefeld University, Inspiration 1,
33619 Bielefeld

³ San Diego State University Laboratory for Language and Cognitive Neuroscience, 6495
Alvarado Road, San Diego, CA 92129

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Abstract

Meir's (2010) *Double Mapping Constraint* (DMC) states the use of iconic signs in metaphors is restricted to signs that preserve the structural correspondence between the articulators and the concrete source domain and between the concrete and metaphorical domains. We investigated ASL signers' comprehension of English metaphors whose translations complied with the DMC (*Communication collapsed during the meeting*) or violated the DMC (*The acid ate the metal*). Metaphors were preceded by the ASL translation of the English verb, an unrelated sign, or a still video. Participants made sensibility judgments. Response times (RTs) were faster for DMC-compliant sentences with verb primes compared to unrelated primes or the still baseline. RTs for DMC-violation sentences were longer when preceded by verb primes. We propose the structured iconicity of the ASL verbs primed the semantic features involved in the iconic mapping and these primed semantic features facilitated comprehension of DMC-compliant metaphors and slowed comprehension of DMC-violation metaphors.

Keywords: metaphor; iconicity; sign language; bimodal bilingualism

Metaphors are ubiquitous in everyday language (Lakoff & Johnson, 1980) and are instrumental in how we conceptualize and communicate about abstract concepts (e.g., Jamorzik, McQuire, Cardillo, & Chatterjee, 2016). Metaphors involve mapping between two domains, from a concrete domain associated with sensory-motor experience to a more abstract domain of mental or subjective experience. For example, vertical space is used to talk about positive and negative emotional states (e.g., *He was feeling down*; *That song lifted my mood*), and we talk about understanding ideas in terms of grasping actions (e.g., *I held onto the idea*; *She finally got it*) (Lakoff & Johnson, 1980). Sign languages also use metaphor, expressing abstract concepts in terms of concrete source domains (Taub, 2001; P. Wilcox, 2004). For example, the American Sign Language (ASL) sign INFORM depicts holding an object at the head, then moving and releasing the object to an addressee. The ASL sign HAPPY is produced with an upward motion, while the sign DEPRESSED is produced with a downward motion.

Building on the work of Taub (2001), Meir (2010) noted that these metaphorical signs are iconic and involve two mappings: a metaphorical mapping from concrete to abstract conceptual domains (as observed for spoken language metaphors), as well as a mapping between the concrete source domain and the linguistic form (the iconic mapping). Meir (2010) further argued that metaphors in sign language must maintain the structural integrity of this double mapping. That is, the iconic form of a sign for a concrete concept and its metaphorical extension cannot be based on two different aspects of that concept. For example, the metaphor *The acid ate the metal* is acceptable in many spoken languages, but rejected for sign languages in which the sign EAT iconically depicts holding food and moving it to the mouth (see the top of Figure 1 below). The meaning conveyed by the metaphorical use of EAT in this example is that something is corroded (“eaten away”), not that something is held and brought to the mouth. Thus, the two mappings do

not match because the relevant meaning of the metaphorical mapping (consumption) is not encoded by the iconic form of the sign, and the meaning depicted in the iconic mapping (bringing food to the mouth) is not present in the metaphor. Meir (2010) formulates this constraint as follows (pg. 879):

Double-Mapping Constraint (DMC): A metaphorical mapping of an iconic form should preserve the structural correspondences of the iconic mapping. Double-mapping should be structure-preserving.

The DMC renders the sign-for-word translations of many metaphors in English unacceptable in ASL, e.g., BREAK (depicts snapping an object in half) cannot be the verb that is used in the metaphor *This theory breaks new ground* where the metaphorical mapping involves breaking into the earth; CRAWL (depicts bent legs moving along a surface) cannot be used in the metaphor *The weeks crawled by* where the metaphorical mapping is based on slow progression.

The present study was designed to investigate the sensitivity of deaf ASL-English bilinguals to the DMC when comprehending English metaphors whose literal translations either violate or comply with the DMC. It is important to note that English metaphors whose sign-for-word translations violate the DMC can be expressed in ASL through the use of different constructions or verbs that allow the ASL metaphor to comply with the DMC. For example, the ASL sign translated as ‘nibble’ depicts the teeth of an agent (by curved, slightly bending fingers) moving across a surface (the palm of the non-dominant hand), similar to the sign glossed as NIBBLE in Israeli Sign Language described by Meir (2010). In both languages, NIBBLE can be extended to express the metaphorical notion of acid eating through metal because NIBBLE is not produced at the mouth and the movement of the fingers across the palm depicts consumption of a substance, thus complying with the DMC (Meir, 2010). To assess sensitivity to the DMC, we

used a priming paradigm in which written English metaphors were presented whose literal translations either complied with the DMC (e.g., *Communication collapsed during the difficult meeting*, where the iconic ASL sign COLLAPSE has a downward motion depicting something collapsing) or that violated the DMC (as in *The acid ate the metal*). Each sentence was preceded by a prime video of either **a)** the ASL literal translation of the metaphorical verb (e.g., COLLAPSE, EAT), **b)** an ASL sign that was unrelated to the English sentence (e.g., BENEFIT, PENNY), or **c)** a still baseline in which the model did not sign. Participants were asked to make sensibility judgments for each sentence, and anomalous sentences were included to create the task.

Previous research has revealed a metaphorical priming effect in which accessing a concrete source domain facilitates comprehension and production of abstract metaphors (e.g., Boroditsky, 2001; Boroditsky & Ramscar, 2002; Wilson & Gibbs, 2007; Sato, Schafer, & Bergen, 2015). For example, producing or imagining a body movement (e.g., pushing) speeded comprehension of a related metaphor (e.g., *push the argument*) compared to an unrelated movement (e.g., chewing) (Wilson & Gibbs, 2007). Sato et al. (2015) found that visually activating a concrete source domain with a picture triggered the production of metaphorical language from that same source domain, e.g., a picture depicting containment (an apple in a box) prompted use of a containment metaphor for the English prompt verb “love” (e.g., *Mary is full of love*) compared to a neutral, unrelated picture or to a picture depicting a different source domain (e.g., possession (a boy holding an apple), which prompted *Mary has a lot of love to give*). Based on these findings, we hypothesized that seeing a concrete ASL sign translation would activate the source domain of the relevant English metaphor, thus speeding subsequent comprehension. Crucially, however, we predicted that the nature of the iconicity of the ASL primes would impact

English metaphor comprehension. Specifically, we predicted that comprehension facilitation would only occur when the iconic mapping complied with the DMC (e.g., COLLAPSE – *Communication collapsed during the difficult meeting*) and that interference would be observed when the iconic mapping violated the DMC (e.g., EAT – *The acid ate the metal*).

If these predictions are confirmed, it will indicate that sign iconicity impacts the nature of the semantic features that are activated in memory, which then impacts cross-language priming effects and comprehension. For example, we suggest that the iconic mapping for the sign EAT makes certain semantic features more salient (e.g., eating involves the mouth), and thus when signers then read an English metaphor in which these semantic features are in conflict with the metaphorical mapping (such as *The acid ate the metal*), comprehension of the metaphor will be slowed. Conversely, when the iconic mapping of the prime sign depicts semantic features that support the metaphorical mapping in English (e.g., COLLAPSE – *Communication collapsed during the difficult meeting*), then comprehension of the English metaphor should be facilitated. This view assumes that the structure of the mapping between the phonological features of the sign form and the semantic features of the lexical concept enhances the prominence of those semantic features (Emmorey, 2014).

On the other hand, it is possible that the nature of the iconic mapping of a sign has no impact on the salience of the semantic features that are activated in memory. That is, when signers recognize the sign EAT, they activate all semantic features of its meaning, including the notion of consumption. In this case, the ASL prime EAT should facilitate comprehension of the relevant English metaphor by priming the English verb “eat” and pre-activating the semantic features involved in the metaphorical mapping. Under this view, semantically-related ASL primes preceding both the DMC-compliant English metaphors (COLLAPSE – *Communication*

collapsed during the difficult meeting) and the DMC-violation metaphors (EAT – *The acid ate the metal*) should facilitate comprehension, compared to unrelated ASL primes and the neutral baseline (still video). The neutral baseline was included to determine whether deaf signers had more difficulty comprehending English metaphors whose literal translations violated the DMC than complied with the DMC when ASL was not pre-activated by a prime sign.

Method

Participants

Twenty-five deaf native ASL signers (13 female) participated in the experiment (mean age = 30.4 years; $SD = \pm 5.6$). All participants were congenitally deaf and were born into deaf signing families. The participants learned ASL as their first language (L1) and English as their second language (L2). All participants were skilled readers, as assessed by the reading comprehension subtest of the Peabody Individual Achievement Test (mean raw score = 85.4; $SD = \pm 9.3$). The participants were all right-handed (self-report) and provided informed consent in accordance with the Institutional Review Board of San Diego State University.

Stimuli

Sixty action-related English metaphors were presented as sentence targets. The ASL translation equivalents of 30 of these metaphors violated the DMC (DMC-Violation condition); that is, it is not possible to express these English metaphors using ASL translations of the main verb, e.g., *The weeks crawled by*. The ASL translation equivalents of the other 30 English metaphors complied with the DMC (DMC-Compliant condition); that is, the English metaphor could be expressed in ASL using the translation of the main verb (e.g., *He hopped from job to job*). There was no significant difference in sentence length between the DMC-Compliant metaphors ($M = 5.8$ words) and the DMC-Violation metaphors ($M = 5.4$ words), $t(58) = 1.013, p$

= 0.315. The mean frequency of the words in the DMC-Compliant metaphors ($M = 3.53$) and DMC-Violation metaphors ($M = 3.47$) also did not differ significantly, $t(57) = 0.220$, $p = 0.826$. Finally, 20 semantically and syntactically anomalous sentences were also included as target trials for the semantic anomaly judgment task (e.g., *The ever is flailing present monkey*). The anomalous sentences had a similar length ($M = 6.15$ words) and word frequency ($M = 4.22$) as the metaphorical sentences.

Each trial consisted of a video prime followed by a sentence target in written English. Sixty primes were ASL translations of the English verb used in the metaphor, and 60 video primes were ASL nouns that were unrelated to the sentence. Non-iconic ASL nouns were used as unrelated primes to maximally distinguish the related and unrelated prime types. This design also heightened participants' sensitivity to the verb primes, which were always translations of the main verb in both the DMC-Compliant and the DMC-Violation metaphors. In the anomalous trials, ASL nouns served as primes (half related to an English noun in the sentence, and half unrelated to the content of the sentence). Finally, in the baseline condition, a video of the sign model at rest served as the prime. The sign primes were produced by a deaf native ASL signer, and the sign videos were edited so that each video began five frames before the beginning of the articulation of the sign (defined as first frame showing movement of the arms and/or hands) and five frames after the end of sign articulation (defined as the last frame showing a movement of the arms and/or hands). Each English metaphor was combined with a related, an unrelated, and a still video prime. Trials were counterbalanced across participants so that no participant read the same metaphor more than once. Figure 1 gives an overview of the prime-target stimulus types. A list of the stimulus material is included in Appendix A.



Figure 1: Examples of sign videos and target English sentences in the DMC Violation and DMC Compliant conditions.

Six comprehension questions were added throughout the experiment and presented instead of a metaphoric target to make sure that participants read the sentences. These questions were related to the content of the previous sentence target and required a simple “yes” or “no” answer. The question trials were preceded by the English phrase *Question next*. On average, participants answered 78.6% of these comprehension questions correctly.

Procedure

After being introduced to the experiment and the task, participants were seated in front of a desk facing a computer screen, and a keyboard was positioned in front of them to measure response times. The participants were instructed to rest their left and right forefingers on the keys *f* and *j*. For half of the participants *j* represented the decision for sensible (and *yes* for the

comprehension questions), for the other half it represented the decision for *anomalous* (and *no* for the comprehension questions). The experiment was presented via the presentation software Psyscope X (build 77) on Mac OS X (vers. 10.8.5).

Each experimental trial comprised three epochs. In the first epoch, a black fixation cross appeared on the screen for 1000 ms, which indicated the beginning of a new trial. In the second epoch, the video prime was presented, showing either a related sign, an unrelated sign, or the still image of the model. In the third epoch, the written English metaphor appeared on the screen immediately after the end of the prime video. Participants were instructed to make a sensibility judgment to the written metaphor as fast and accurately as possible by pressing the appropriate key on the keyboard. The next trial started as soon as the participant pressed a key or after a time-out of 5000 ms.

Results

The statistical analysis was performed via SPSS 22 on Mac OS X (vers. 10.11.5), excluding the nonsense trials. Response times (RTs) were measured from the moment the metaphor appeared on the screen to when the participant made the sensibility judgment. One participant was excluded from the analysis due to chance performance (an error rate of 50%). The mean error rate across all remaining participants for the sensibility judgments was 5.4%. A binary logistic regression conducted on accuracy with prime type and metaphor type as categorical variables showed that the omnibus model was not significant ($R^2 = .004$, $.012$, $\chi^2(7) = 7.3$, $p = .402$). Neither the Prime Type ($\beta = -.27$, $SE \beta = .37$, $p = .458$, 95% CI $[-.37; 1.57]$) nor the Metaphor Type ($\beta = -.55$, $SE \beta = .34$, $p = .106$, 95% CI $[-.29; 1.12]$) were significant variables in the equation. Thus, accuracy did not vary as function of metaphor type or prime type.

For each of the six conditions (three video prime types by two metaphor types), mean RTs were checked for the distribution of normality by means of a z-score analysis. The categories were Related ASL prime, Unrelated ASL prime, Still prime with DMC-Compliant metaphors (1, 2, 3) and Related ASL prime, Unrelated ASL prime, Still prime with DMC-Violation metaphors (4, 5, 6). In conditions 1, 2, 5, and 6 the data was not normally distributed. Therefore, all data points in these conditions deviating more than 2 SD from the mean were excluded from further analyses. The mean proportion of excluded data points was 5.7%.

The remaining data were analyzed in a Linear Mixed Model (LMM). The first model only included the fixed factors Prime Type (levels: related, unrelated, still) and Metaphor Type (levels: DMC-Compliant, DMC-Violation). This model revealed main effects of both prime type and metaphor type, as well as a significant interaction between the two factors ($\beta = -227.17$, $SE \beta = 43.79$, $p < .001$, 95% CI [-313.08; -141.25]). In the main model, subjects and items were included as random intercepts, and the different stimulus conditions were defined as a repeated measures variable. Including the random intercepts had a significant positive influence on the model, which was revealed by a comparison of the -2 Restricted Log Likelihood of the different models. The relation between the fixed factors and RTs showed a significant variance in intercepts across participants, $\text{var}(u_{0j}) = 219724.88$, $\chi^2(1) = 688.47$, $p < .01$, and across items, $\text{var}(u_{0j}) = 54917.31$, $\chi^2(1) = 230.86$, $p < .01$. The main model still revealed a significant main effect of the two factors Prime Type ($\beta = 228.78$, $SE \beta = 47.50$, $p < .001$, 95% CI [135.52; 322.03]) and Metaphor Type ($\beta = 149.22$, $SE \beta = 70.11$, $p < .001$, 95% CI [9.92; 288.52]) but most importantly confirmed the significant Prime Type by Metaphor Type interaction ($\beta = -136.38$, $SE \beta = 30.22$, $p < .001$, 95% CI [-195.69; -77.08]).

Separate multilevel models looking for differences between the three prime types in each of the metaphor conditions were conducted to break down the interaction effect. This revealed that in both metaphor conditions, RTs following the three prime types differed significantly (DMC-Compliant: $\beta = 93.41$, $SE \beta = 21.29$, $p < .001$, 95% CI [51.57; 135.25]; DMC-Violation: $\beta = -42.78$, $SE \beta = 21.58$, $p < .05$, 95% CI [-85.20; -36]). The p -values for the separate comparisons are displayed in Figure 2 (corrected for multiple comparisons).

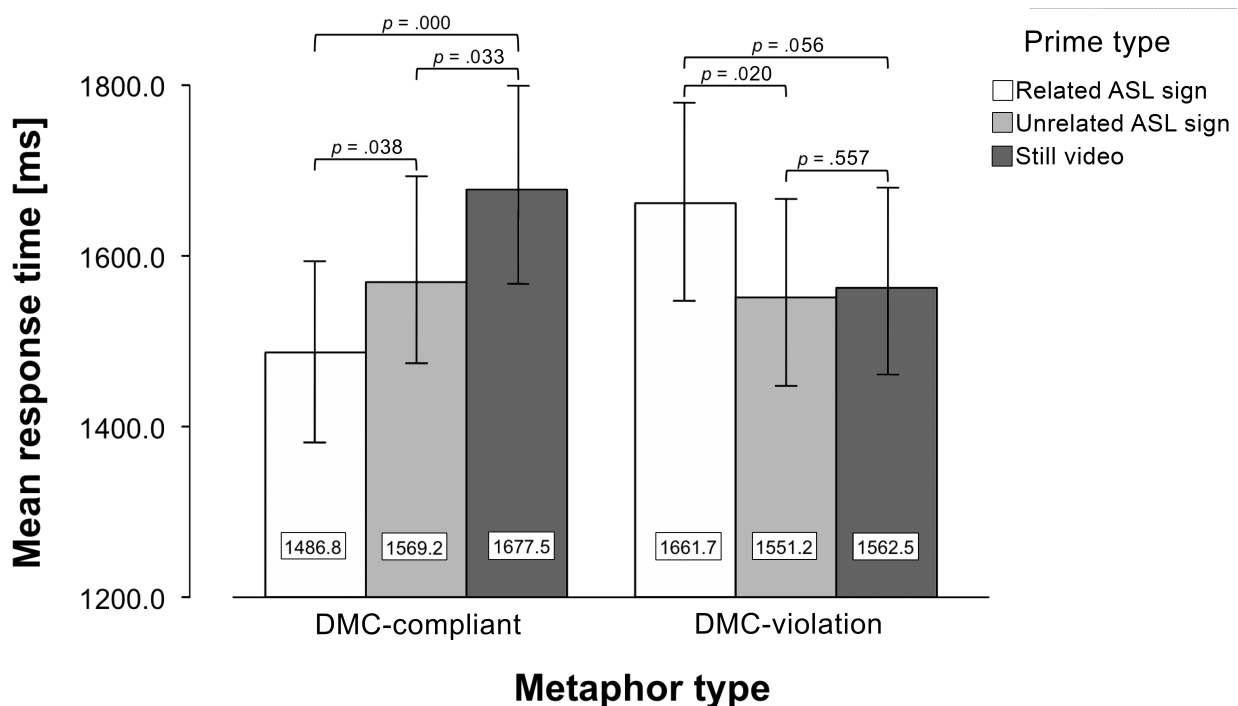


Figure 2. Response times as revealed by the final model of the LMM analysis. The error bars represent the Standard Error of the mean.

Discussion

The results indicated that ASL signers are sensitive to the Double-Mapping Constraint proposed by Meir (2010). Signers were faster to comprehend English metaphors whose literal translations complied with the DMC when the metaphor was preceded by the ASL translation of

the verb (e.g., COLLAPSE – *Communication collapsed during the difficult discussion*), compared to when the metaphor was preceded by either an unrelated ASL sign or by a still video of the sign model. Further, signers were *slower* to comprehend English metaphors whose literal translations violated the DMC when primed by the ASL verb translation (EAT – *The acid ate the metal*), compared to both the unrelated sign and baseline video primes. The fact that comprehension facilitation from ASL verb translations was not observed in both of the English metaphor conditions indicates that the iconic nature of the signs impacted semantic cross-language priming. Specifically, we propose that the structured iconicity of the ASL verbs primed the semantic features that were involved in the iconic mapping, making these features more salient. We suggest that the iconic mapping of the ASL verbs highlighted specific perceptual and/or sensory-motoric semantic features of the concrete concept, and these primed semantic features facilitated comprehension of English metaphors for which those semantic features were present in the metaphorical mapping. In contrast, semantic feature priming by iconic ASL verbs slowed comprehension of English metaphors when those semantic features were not part of the metaphorical mapping.

Somewhat surprisingly we found that for the DMC-compliant condition, metaphor comprehension was speeded when preceded by an unrelated ASL prime compared to the still video baseline. In this case, facilitation cannot be due to cross-linguistic priming of semantic features involved in the English metaphor. A speculative interpretation of this effect is that the ASL signs served to “pre-activate” the linguistic system which facilitated comprehension of English. Unrelated ASL primes did not facilitate comprehension for the DMC-violation condition, and we suggest that any facilitative effect of linguistic pre-activation was cancelled

out by the slowing associated with comprehending English metaphors that violate the DMC, as suggested by the main effect of metaphor type.

However, when the prime was a still video (no ASL sign was presented), participants were not slower to comprehend DMC-violation metaphors compared to DMC-compliant metaphors. This result suggests that comprehension of English metaphors may only be impacted by the nature of the ASL translation when ASL is overtly activated. That is, seeing the ASL sign primes its English translation which either facilitates or slows comprehension depending on the nature of the English metaphor. Without such overt priming, signers are not affected by whether the ASL translation of the metaphor conforms to the DMC or not.

Many studies find cross-language priming effects for spoken language bilinguals, with particularly strong effects from the first language (L1) to the second language (L2) (e.g., Basnight-Brown & Altarriba, 2007; Midgley, Holcomb, & Grainger, 2009). The ASL-to-English priming effects observed here are consistent with a growing body of evidence supporting cross-language activation in both deaf and hearing bimodal bilinguals (e.g., Morford et al., 2011; Kubus, Villwock, Morford, & Rathmann, 2015; Villameriel, Dias, Costello, & Carreiras, 2016; Meade et al., 2017). These studies used an implicit priming paradigm and found evidence for activation of signs when reading words (e.g., semantic relatedness decisions to English word pairs were impacted when their translations were form-related in ASL; Morford et al., 2011). A few (unpublished) studies have also found evidence suggesting implicit activation of words when comprehending signs (e.g., Van Hell, Ormel, Van der Loop, & Hermans, 2009; Hosemann, Altvater-Mackensen, Herrmann, & Mani, 2013; Lee et al., 2018). Here we overtly primed the main verb of an English (L2) metaphor with its ASL (L1) translation, but metaphor comprehension was only facilitated when the iconic form of the ASL sign depicted semantic

features of the concrete meaning that were relevant to the metaphorical mapping. If the iconic form of the ASL verb depicted semantic features of the concrete source domain that were not involved in the metaphorical mapping, then ASL signers were slower to comprehend the English metaphor. Recently, Mott, Midgley, Holcomb, and Emmorey (in press) also investigated the role of iconicity in cross-modal, cross-linguistic priming in deaf bimodal bilinguals using a translation task and event-related potentials (ERPs). Bimodal bilinguals saw English word primes followed by ASL sign targets (half iconic; half non-iconic) and were asked to decide whether the ASL sign was the correct translation of the word prime or not. Correct translations were responded to more quickly and exhibited a larger N400 response compared to incorrect translations (unrelated prime words). However, the iconicity of the sign did not impact response times or the latency or amplitude of the N400 response. We suggest that the behavioral and neural priming effects in the Mott et al. (in press) study were not modulated by sign iconicity because the iconic mapping was not relevant to the translation task. In contrast, the semantic features depicted by the ASL verb primes in the present study were relevant to understanding the English metaphors. It is also possible that iconicity effects are dependent on translation direction (e.g., stronger for ASL to English than for English to ASL) or on the type of task (sensibility judgments vs. translation decisions).

Overall, our results are consistent with previous studies showing that metaphor understanding is facilitated when the concrete source domain of the metaphor is primed (e.g. Wilson & Gibbs, 2007; Gibbs & Matlock, 2008). The unique contribution of the present study is to show that priming certain semantic features of the concrete domain through the structured iconic mapping of a sign can either facilitate or slow comprehension of the derived metaphor.

These results provide novel psycholinguistic evidence supporting Meir's (2010) Double-Mapping Constraint on metaphorical expressions.

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Appendix A

DMC Compliant metaphors

Metaphor	Related ASL verb	Unrelated ASL noun
<i>Communication collapsed during the difficult meeting.</i>	COLLAPSE	BENEFIT
<i>Don't throw away your plans for the future.</i>	THROW-AWAY	APPLE
<i>Donations rose after the earthquake.</i>	RISE	BIOLOGY
<i>Exercise can help you build up energy.</i>	BUILD-UP	FARM
<i>He hopped from job to job.</i>	HOP	MICROWAVE
<i>He wrapped up the project.</i>	TIE	EXPERIENCE
<i>Her grades went up.</i>	IMPROVE	VEGETABLE
<i>Her responsibilities were reduced.</i>	REDUCE	UNIVERSITY
<i>His parents cut off his financial support.</i>	CUT-OFF	TOBACCO
<i>Hold that thought for a second.</i>	HOLD	GARAGE
<i>I asked him to swallow his pride.</i>	SWALLOW	CLASS
<i>I built up my confidence.</i>	BUILD-UP	FREEWAY
<i>I could not catch what you said.</i>	CATCH	TROPHY
<i>I gave you that idea.</i>	GIVE	DEMAND
<i>I got through to him.</i>	GET-THROUGH	TEST
<i>I need to put these feelings aside.</i>	PUT-ASIDE	CHANCE
<i>I put that thought aside.</i>	PUT-ASIDE	NUT
<i>My dreams collapsed.</i>	COLLAPSE	LECTURE
<i>My feelings for her decreased.</i>	DECLINE	COMPUTER
<i>She gave you a hint.</i>	GIVE	LANGUAGE
<i>Stock prices plummeted in 2008.</i>	GO-DOWN-FAST	THEATER
<i>The city's population shrank by 10%.</i>	SHRINK	INTEREST
<i>The flu spread across the country.</i>	SPREAD	INTERPRETER
<i>The idea popped up during the conversation.</i>	POP UP	TOMATO

<i>The number of college students is shrinking.</i>	SHRINK	OFFICE
<i>The settlers grabbed the unclaimed land.</i>	GRAB	ALARM
<i>The students grabbed all the good jobs.</i>	GRAB	EGG
<i>We were throwing some ideas back and forth.</i>	THROW	DIAMOND
<i>You have to grasp this opportunity.</i>	GRASP	COUNTRY
<i>You should hold that promise.</i>	HOLD	MUSIC

DMC Violation metaphors

Metaphor	Related ASL verb	Unrelated ASL noun
<i>He closed the deal.</i>	CLOSE	HONOR
<i>He cut me off when I was talking.</i>	CUT-OFF	LEAF
<i>He devoured the book.</i>	DEVOUR	NAME
<i>He entered a state of euphoria.</i>	ENTER	HORSE
<i>He nailed the answer.</i>	NAIL	BATH
<i>He spit out the answer.</i>	SPIT OUT	ELEGANCE
<i>He's coming out of the coma.</i>	OUT	GIRL
<i>Her idea took off.</i>	TAKE OFF	SISTER
<i>Her mean words cut me deeply.</i>	CUT	DORMITORY
<i>His mind snapped.</i>	SNAP	EARTH
<i>I could not tear myself away from that book.</i>	TEAR	TRAIN
<i>I fell into a depression.</i>	FALL	CAFETERIA
<i>I had to juggle my schedule around.</i>	JUGGLE	ANIMAL
<i>I hold him accountable for the bad outcome.</i>	HOLD	MONTH
<i>My expectations sank after the announcement.</i>	SINK	PRESIDENT
<i>Night fell quickly.</i>	FALL	LIBRARY
<i>She walked away from the relationship.</i>	WALK-ON-TWO-LEGS	HOLIDAY
<i>Steer clear of that topic.</i>	STEER	BUTTER
<i>The acid ate the metal.</i>	EAT	PENNY
<i>The event shook her up.</i>	SHAKE	HUSBAND
<i>The price climbed.</i>	CLIMB	MACHINE

The project took off immediately.

The weeks crawled by.

They like to stir up trouble.

This theory breaks new ground.

Time flies.

We hammered out a deal.

Where did you dig up that idea?

You cannot grasp the severity of this situation.

You have to put more effort in those things.

TAKE OFF

CRAWL

STIR UP

BREAK

FLY

HAMMER

DIG UP

GRASP

PUT

GAME

LAWYER

STAFF

NUMBERS

NIGHT

STUDENT

PAIN

BREAD

PIG

Anomalous sentences

Metaphor

A grapefruit die composition for classical would.

A long keyboard sees the too stick.

Always shoulder that strikes for way.

An everything shirt runs old through.

Another loves joke a day good.

Books step paying does not first stumbling.

Bread asking comes trickery.

Clear is often pregnant guitar.

Down small more sat once baby.

Eleven shiver chair makes number people.

Jumps and rum ways stew both.

Passionate toothbrush a slips on evening.

Says shooter nothing of goodbye the importance.

Shower to the wondrous likes drum.

Style fire house set shovel.

The ever is flailing present monkey.

The mind body goods the stole.

Unrelated

ASL noun

EXPLANATION

KITCHEN

REVENGE

CHOCOLATE

ISLAND

YEAR

Related

ASL noun

KEYBOARD

SHOULDER

SHIRT

BOOK

GUITAR

BABY

TOOTHBRUSH

DRUM

SHOVEL

MONKEY

MIND

Upon legs side the somebody other else's stands.

Violin is on ready table die not.

Your glove often floor is above.

BANK

VIOLIN

GLOVE