THIS PAPER EXPLORES\textsuperscript{1} the linguistic utilization of the concept of force dynamics. Force dynamics is a mode of constructing the world in terms of entities interacting with respect to force (Talmy 1988, 1995). Since human construal of world events invariably involves the force dynamic relations among the event participants, force dynamics is thought to be pervasive in thinking and consequently in language, which mirrors our thoughts. This is well evidenced by the grammatical relations among the sentential arguments that represent force dynamic relations, such as causative, conjunctive, preposition, and modal aspects (Talmy 1988, 1995, Sweetser 1990). The focus of the present research, however, is on a more local level, i.e., the creation of variational forms in the lexis either through new word coinage or through modification of existing words, with particular reference to the uses of verbs that denote infliction of force, from a variation perspective. Though Korean exhibits an elaborate system of sound symbolism, which has received much attention since the pioneering study by Jung (1938), there has been no attempt to look at the issue from a variational perspective, and this paper intends to fill the gap.

1. ICONICITY BETWEEN PHYSICAL FORCE AND SEMANTICS. The concept of force dynamics is frequently reflected in lexicalization in the form of iconicity. This link is well attested in sound symbolism, a concept crucial for the discussion of the iconicity of physical force in language.

Korean has a very elaborate system of sound symbolism for consonants and vowels (Kim 1976, Kim-Renaud 1976, Martin 1962, \textit{inter alia}).\textsuperscript{2} As for the consonant sound symbolism, there are two kinds of forces with respect to articulatory gestures that bear sound symbolism: tensing and aspiration. For instance, if a consonant is tensed, it tends to imply a more localized and intensified force, and if a consonant is aspirated, it tends to imply a stronger exerted, but diffused, force. The concepts of tensing and aspiration are so systematically utilized in Korean that it has well-established Plain-Tensed-Aspirated tripartite correlational bundles in Korean consonants. The semantic contrast is shown in the following examples of onomatopoeic minimal pairs where such features serve as phonemic features.

(1) Tensed: more localized and intensified force

- \texttt{[boglbogl]} e.g., water boiling in a small pot
- \texttt{[b’oglb’ogl]} e.g., thick stew boiling
Aspirated: more strongly exerted, but diffused, force

\[ \text{[jol\textsuperscript{\text{N}}\text{h}\textsubscript{\text{N}}]} \] e.g., a colt walking behind its mother
\[ \text{[t\textsuperscript{\text{N}}\text{lo\text{h}}\text{\textsubscript{\text{N}}\text{h}}]} \] e.g., a colt trotting along behind its mother

The foregoing exposition on sound symbolism, though cursory, shows that Korean uses sound symbolism in a productive way. As noted above, tensing and aspiration are the two mechanisms of sound symbolism that are of particular importance in a context of force dynamics reflected in Korean. The semantic characterization that tensing creates the meaning of more localized and intensified force and aspiration more strongly exerted, but diffused, force, is a direct reflection of exactly what is physically happening at the time of phonation, i.e., tensing as an articulatory gesture makes the muscles of the articulators tensed (\textit{contra} laxed) by exerting extra forces, whereas aspiration delays the onset of voicing with a strong release of air puffs (\textit{contra} unaspirated or unreleased). Therefore, tensing can be characterized as a localized force and aspiration as a diffused force in terms of both physical phonation and linguistic meaning.

With reference to these two valuable force dynamic notions, this paper shows that this force dynamic iconicity is attested in new word coinage, in slang expressions and in phonological modifications in emphatic uses, thus creating a large number of forms in lexical and phonological variations, the subject of the present research.

2. THE DATA OF THE PRESENT STUDY. Korean force-infliction verbs denote events in which force is inflicted in various ways resulting in various changes of the theme object. Some of them make reference to the local geography of the theme, presence or absence of friction, duration of such force-infliction events, etc. (Rhee 1996). The data are based on the lists of verb categories in National Academy of Korean (2002, 2003), excluding Sino-Korean words, morpho-syntactically complex words, and vowel-initial words. The literature-based data are supplemented by a brief student survey from college students whose first language is Korean, for newly coined slang expressions and tensed/aspirated variations of pronunciation of regular words.

2.1 FULLY LEXICALIZED CASES. The first category consists of words that are fully lexicalized. The following list of word pairs in (3) shows in contrast tensed vs. non-tensed minimal pairs (see Appendix 1 for more examples).\textsuperscript{3}

\begin{align*}
(3) & \text{[ga-]} & \text{‘go’} & \text{[k’\text{a-}]} & \text{‘peel’} \\
& \text{[gæ-]} & \text{‘(weather) clears’} & \text{[k’æ-]} & \text{‘break’} \\
& \text{[səl-]} & \text{‘be half-cooked’} & \text{[s’əl-]} & \text{‘cut, shred’} \\
& \text{[ja-]} & \text{‘sleep’} & \text{[c’a-]} & \text{‘squeeze’} \\
& \text{[bæ-]} & \text{‘get smeared, get pregnant’} & \text{[p’æ-]} & \text{‘forcibly take out of, pull out’}
\end{align*}

It is evident in (3) that the semantics of the non-tensed words tends to be relatively neutral to strong force, and the semantics of the tensed words tends to involve intensified, localized force. A similar pattern is observed in the case of aspiration, as shown in the examples of
word pairs in (4), the same state of affairs observed with the onomatopoeic word pairs in (1) and (2) (see Appendix 2 for more examples).

(4)  
[ja-] ‘sleep’  [tʃʰa-] ‘kick’  
[dal-] ‘decrease, release’  [tʰal-] ‘take off (dust)’  
[bul-] ‘(wind) blow’  [pʰul-] ‘dissolve into, disentangle’  

The word pairs in (4) show the contrast of non-aspirated vs. aspirated minimal pairs. These words are semantically unrelated and they are fully lexicalized. A look at the list reveals that the semantics of the non-aspirated words tends to be relatively neutral to strong force, whereas the semantics of the aspirated words tends to involve strong, diffusive force.

As expected, however, this sound-meaning correlation with reference to tensing and aspiration is not a firm rule. There are unclear cases, and some of them may potentially be counter-examples, as shown in (5).

(5)  
[gal-] ‘grind’  [k’al-] ‘spread and cover, run over’  
[daji-] ‘mince, make firm’  [t’aji-] ‘(enthusiastically) argue, protest’  
[jat-] ‘die down, decrease’  [tʃʰat-] ‘look for, find’  
[jwe-] ‘tighten’  [c’we-] ‘expose to fire/light’  

Though small in number (NB. there are a few more cases not listed here), the examples in (5) do not show semantic opposition in terms of force dynamics with reference to tensing and aspiration. For instance, [gal-] is ‘grind’ and [k’al-] is ‘spread and cover, or run over’. Since grinding also involves force, whether [gal-] and [k’al-] really shows this contrast of force dynamics is not clear. Likewise, in the next pair of examples, [daji-] ‘mince or make firm’ and [t’aji-] ‘enthusiastically argue or protest’, raise similar concerns.

Another class of words consists of the tensed/aspirated words that signify involvement of strong force. These words, however, do not have non-tensed/non-aspirated counterparts and thus there is no semantic contrast through presence/absence of tensing or aspiration. A partial list of such words is in (6).

(6)  
[k’ak-] ‘pare, peel’  [k’æmul-] ‘bite’  
[p’al-] ‘suck’  [p’æat-] ‘rob, take by force’  
[s’au-] ‘fight, struggle’  [s’at-] ‘pile up’  
[c’o-] ‘peck’  [c’odli-] ‘be pinched by’  
[tʃʰai-] ‘get kicked (out)’  [tʃʰusru-] ‘rearrange; make orderly’  

As was the case with the previous examples, unclear cases exist. The examples in (7) involve tensing, which does not seem to involve a prominent force infliction sense. Likewise, the examples in (8) lack either tensing or aspiration, but still have a certain level of force infliction sense. Depending on the level of rigor for applying the rule, these may be simply conceived of as unclear cases or as counterexamples. However, it is noteworthy that the number of such cases is relatively small.
2.2 VARIATIONAL CASES: REGULAR WORDS. The variational cases are of special import in the current research because these are the instances where the language users make purposeful manipulations on linguistic forms often 'against' the established norm of language use. The first of these are 'regular' variational cases, regular in the sense that the manipulative operation is directed to the regular words, as contrasted with the new word coinage for slang expressions to be addressed in the following section. The examples in (9) are those words that must be pronounced without tensing according to prescriptive grammar, which, however, are often pronounced with tensing in normal speech. The list in (9) incorporates the so-called standard pronunciation, the casual pronunciation, and the perceived, and/or alleged, semantic effect of tensing (see Appendix 3 for more examples).

(9)  

\[
\begin{align*}
\text{[gam-]} & \rightarrow \ [k\text{'am-}]: \text{‘shampoo (hair)’} \quad \text{more finger-working, more thorough} \\
\text{[gulg-]} & \rightarrow \ [k\text{'ulg-}]: \text{‘scratch’} \quad \text{more force used} \\
\text{[dadum-]} & \rightarrow \ [t\text{’adum-}]: \text{‘trim, prune’} \quad \text{more finger force used} \\
\text{[dak-]} & \rightarrow \ [t\text{’ak-}]: \text{‘clean, cleanse’} \quad \text{more abrasion involved} \\
\text{[sa(l)m-]} & \rightarrow \ [s\text{’a(l)m-}]: \text{‘boil in water’} \quad \text{boil at higher temperature} \\
\text{[joru-]} & \rightarrow \ [c\text{’oru-}]: \text{‘beg repeatedly’} \quad \text{more forceful and more tenacious} \\
\text{[jumuru-]} & \rightarrow \ [c\text{’umuru-}]: \text{‘knead, fondle’} \quad \text{more finger-working}
\end{align*}
\]

Despite condemnation by prescriptive grammarians, people often or normally pronounce the words in (9) with seemingly unnecessary tensing. Since the speakers know that they are supposed to say them without tensing, when asked why, they offer their rationale saying that there exist certain semantic differences between the non-tensed and tensed counterparts: the tensed counterparts suggest use of stronger force. For instance, [gam-] signifies shampooing one's hair, and [k'am-] signifies a shampooing event that involves more finger-work, and a more thorough job in washing the hair.

2.3 VARIATIONAL CASES: SLANG EXPRESSIONS. The next category consists of slang expressions. Generally speaking, slang expressions in Korean have a strong tendency to have tensed or aspirated consonants, with tensing more frequent. The immediate concern here is the cases where the ordinary non-tensed words have 'normal' meaning, whereas their tensed counterparts have become slang expressions, thus resulting in lexical divergence, resembling divergence of grammatical form (Hopper 1991) and 'splits' (Heine & Reh 1984), as shown in (10) (see Appendix 4 for more examples).
2.4 Slang Expression with Force Infliction Verbs. Slang expressions in general tend to include tensed or aspirated sounds, as noted in the previous section. Similarly, even a cursory look at any lists of slang expressions reveals that they either involve force infliction verbs that contain tensed or aspirated sounds, or make new words featuring such sounds. For instance, the following list (11) illustrates force infliction verbs, e.g. [k’a-] ‘peel’, [t∫hi-] ‘hit’, [k’i-] ‘forcibly insert’, [t’æri-] ‘hit’, and [c’ogæ-] ‘split’, being used as the main verb in the slang expressions (see Appendix 5 for more examples).

(11) exaggerate/lie: [p’əŋk’a-], [p’əŋt∫hi-]
lie: [gurak’a-], [gurat∫hi-], [s’æŋk’a-]
act too slowly: [dwip’uk t∫i-]
telephone: [jənhwa t’æri-]
send text message: [munc’a k’a-]
smile: [c’ogæ-]
be poor: [biŋgon t’æri-]

2.5. Newly-Coined Slang Expressions. Use of newly-coined words as slang expressions also shows a similar strategy of using tensed and aspirated sounds, as illustrated in the examples in (12) (see Appendix 6 for more examples).

(12) stupid person: [dolt’æŋi], [t’orai], [p’ik’u], [c’oda], [c’imp’a]
be embarrassed: [c’okt’æŋha-], [c’okp’ali-]
imitation, fake: [c’akt’un], [c’aga], [c’adæŋ]
girl-friend: [k’alt∫i], [k’al], [ek’i]
run away: [t’ok’i-], [c’æ-]

The use of such tensed and/or aspirated consonants in slang expressions seems to be motivated by the speaker’s desire to add strong emotive force as a part of the semantics of the expressions. The reflection of force dynamics in these examples is on an abstract level. In this context it is noteworthy that the newly coined slang expressions are not necessarily force infliction verbs, but include verbs of experience and even nominals.

2.6 Tensing and Aspiration in Grammar. There are cases that illustrate that the phonetic features, tensing and aspiration, are fully grammaticalized, i.e. they participate in development of grammatical morphemes. For example, the transitivizer -chi- [-t∫hi-],
developed from the verb *chi*- ‘hit’, and the transitive/cause *-hi-*, which is phonemically /hi/ but phonetically in most cases causes aspiration, are grammatical morphemes. In other words, the physical aspiration is used to add the meaning of causative force. Their uses are as exemplified in (13). The lexical source of [-hi-], however, has not been identified.

(13)  
- [guru-] ‘be wrong’ > [gurut∫hi-] ‘make wrong (make a mistake)’
- [balg-] ‘be bright’ > [balkhi-] ‘enlighten, illuminate’
- [ib-] ‘wear’ > [iphi-] ‘dress, make put on’
- [nalb-] ‘be broad’ > [nalpbi-] ‘broaden’
- [gut-] ‘be solid’ > [gutt∫hi-] ‘make solid’

As shown in (13), [guru-] ‘be wrong’ becomes [gurut∫hi-] ‘make wrong, make a mistake’, and [balg-] ‘be bright’ becomes [balkhi-] ‘enlighten, illuminate’ with the addition of the aspirated transitivizer -chi- and -hi-, respectively.

Another case of grammaticalized force involves the emphatical -chi-, also a development from the verb *chi*- ‘hit’, as shown in examples in (14).

(14)  
- [k’æ-] ‘break’ > [k’æt∫hi-] ‘break completely [emphatic]’
- [not-] ‘release’ > [nott∫hi-] ‘miss, drop fast unintentionally’
- [mil-] ‘push’ > [milt∫hi-] ‘push forcefully’
- [ap-] ‘overturn’ > [apt∫hi-] ‘overturn with force’
- [budit-] ‘collide’ > [buditt∫hi-] ‘collide with force’

The semantics of verbs with emphatic -chi-, as is evident from the examples given above, implies various meanings: (centrally) emphasis, crudity, haplessness (or uncontrollability), etc. For example, [k’æ-] ‘break’ becomes [k’æt∫hi-] ‘break completely’, and [not-] ‘release’ becomes [nott∫hi-] ‘miss, fail to catch something after almost catching it, or drop something fast unintentionally’.

The next case is the ascension-marking prefix *chi-*, also derived from the verb *chi*- ‘hit’. The words with this prefix have an added meaning of ‘upwardness’, or consequently, ‘lifting forces’, as shown in (15).

(15)  
a. [sot-] ‘soar’ > [t∫hisot-] ‘soar high up’
 b. [t’u-] ‘soar; open’ > [t∫hit’u-] ‘soar high up; raise eyebrows’
 c. [dat-] ‘run’ > [t∫hidat-] ‘run into in high speed’

As is evident from its grammatical label ‘ascension’-marking, the prefix *chi-* affixes to verbs of movement. For instance, [sot-] is ‘soar’, but [t∫hisot-] is ‘soar high up’, with the involvement of a strong force implied and speedy ascension.

Likewise, the causative -chu- [-t∫hu-] implies the involvement of extra force, and the auxiliary -echi-/ -achi- [-ət∫hi-/ -at∫hi-], derived from the verb *chi*- ‘hit’, also adds a meaning of force to its modified verb, as shown in (16).
A caveat, however, is that language is not always uniformly simplistic and systematic. There are other causatives in Korean, like [-i-], [-ri-], [-gi-], [-u-] and [-gu-], mostly not very productive except for [-i-], that do not have to do with tensed/aspirated phonology and thus cannot be explained in the same way.

3. CONCLUSIONS. Many verbs of force infliction involve tensing and aspiration, and many speakers use tensing and aspiration for those verbs whose standard form involves neither of them, an excellent instance of sound symbolism and iconicity. From the preceding discussion the following generalizations have been found: (i) There often exist lexical ‘splits’: the non-tensed (standard) form remains for standard usage of verbal semantics, while its derived tensed (non-standard) counterpart is for slang use, (ii) Some of the verbs of force infliction have been grammaticalized into derivational affixes with various meanings, (iii) Many slang expressions consist of phrases involving verbs of force infliction; use newly coined words containing tensed/aspirated sounds; or use lexically split words containing tensed/aspirated sounds, and (iv) Force dynamics is a conceptually salient notion, and its linguistic representation is manifested both in grammar and in lexis, especially in lexical variations in slang expressions and other non-standard usage, in phonological variations for emphasis, and also in paradigmatic variations as a result of grammaticalization of derivative affixes.

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1 The author wishes to thank the anonymous reviewers for their detailed comments and suggestions. Special thanks also go to Seongha Rhee for comments on the earlier version of this paper, and to the students who collected the data and responded to the surveys. All remaining errors, however, are mine.


3 Because of the space limitation, more extensive lists of examples in each category could not be provided. They may be obtained by contacting the author.

4 As a matter of fact, the same principle of sound symbolism does not seem to apply to the cases where a prolonged force infliction is involved, as instantiated by ‘grinding’ and ‘stirring’, as opposed to the instantaneous force infliction, e.g. ‘peel’, ‘split’, etc.

5 As an anonymous reviewer points out, the crucial thing about [mʊŋtʃi-] ‘make into a ball’ in the current discussion is the non-aspirated consonant in the first syllable rather than the aspirated consonant at the beginning of the second syllable.
REFERENCES


APPENDICES

1. Tensed vs. Non-tensed Minimal Pairs (in addition to the examples in (3))

<table>
<thead>
<tr>
<th>Tensed</th>
<th>Non-tensed</th>
</tr>
</thead>
<tbody>
<tr>
<td>[goi-] ‘water flowing into (puddle)’</td>
<td>[suroji-] ‘(gradually) die out’</td>
</tr>
<tr>
<td>[gi-] ‘crawl’</td>
<td>[jæ-] ‘measure’</td>
</tr>
<tr>
<td>[dali-] ‘run, be hanging (light)’</td>
<td>[ji-] ‘fall, lose’</td>
</tr>
<tr>
<td>[dut-] ‘hear’</td>
<td>[jirt-] ‘let start, release’</td>
</tr>
<tr>
<td>[sa-] ‘buy’</td>
<td>[s’a-] ‘urinate/excrete with force’</td>
</tr>
<tr>
<td>[sul-] ‘get affected by (rust/mold)’</td>
<td>[de-] ‘get scalded’</td>
</tr>
<tr>
<td>[jot-] ‘follow’</td>
<td>[buri-] ‘let, release’</td>
</tr>
</tbody>
</table>
2. Aspirated vs. Non-aspirated Minimal Pairs (in addition to the examples in (4))

[jæu-] ‘put to sleep’  [tʃʰæu-] ‘fill up with’  [pʰiui-] ‘burn (cigarette),
[jiu-] ‘erase’  [tʃʰiu-] ‘displace, throw away’  spread (smell)’
[dul-] ‘lift’  [θul-] ‘twist’
[biu-] ‘empty (glass)’  [tʰul-] ‘twist’

3. Prescriptively Non-Tensed Words but Pronounced with Tensing (in addition to the examples in (9))

[gərik’i-] > [k’ərik’i-] ‘dislike, shun from’  stronger negative feeling
[gugi-] > [k’ugi-] ‘crumple’  more force used
[gup-] > [k’up-] ‘cook, roast’  more thoroughly
[guvul-] > [k’uvul-] ‘get scorched’  more burning/scarce
[gut-] > [k’ut-] ‘draw (line)’  more force used
[giul-] > [k’iul-] ‘get inclined’  more urgency in situation
[giuri-] > [k’iuri-] ‘tilt’  more force required/used
[dalh-] > [t’alh-] ‘wear out’  more wear and tear
[dudri-] > [t’udri-] ‘hit repeatedly’  more force used
[dudlgi-] > [t’udlgi-] ‘hit repeatedly’  more force used
[purat’ri-] > [p’urat’ri-] ‘break (bone, stick)’  more damage ensued
[buraj]- > [p’uraj]- ‘get broken’  more complete damage
[pusu-] > [p’usu-] ‘destroy’  more force used, more damage
[puli-] > [p’uli-] ‘marinate, soak’  more increase in volume
[but’l-] > [p’ut’l-] ‘get hold of’  more force used
[sak-] > [s’ak-] ‘mix’  more force used
[jaru-] > [c’aru-] ‘cut’  more force used
[jaljalmæ-] > [c’aljalmæ-] ‘be at a loss’  more bewilderment
[joradl-] > [c’oradl-] ‘gradually dry up’  resulting in less water volume
[jul-] > [c’ul-] ‘shrink’  higher degree of shrinkage
[juri-] > [c’uri-] ‘cut down on’  more drastic decrease
[juŋəlgəri-] > [c’uŋəlgəri-] ‘speak unclearly’  more grudge

4. ‘Standard’-Slang Lexical Splits (in addition to the examples in (10))

[dali-] ‘lack’  [t’ali-] ‘be stupid, lack, be ugly’
[giutgəri-] ‘look around’  [k’iutk’əri-] ‘try to seduce’
[dudlgi-] ‘hit repeatedly’  [t’udlgi-] ‘eat to heart’s content, party (v)’
[bat’i-] ‘withstand’  [p’at’i-, [p’at’iŋi-] ‘resist order, reject request’
[pok-] ‘fry’  [p’ok-] ‘give hard time to’
[busu-] ‘break, destroy’  [p’oğa-] ‘conquer, master’
[butjap-] ‘take hold of’  [p’utjap-] ‘hold on to (someone’s hair) in fight’
[butjap’i-] ‘get caught’  [p’utjap’i-] ‘become unable to escape’
[saraŋha-] ‘love’  [s’araŋha-] ‘be crazy for, love intensely’
5. Slang Expressions with Force Inflection Verb (in addition to the examples in (11))

- cut classes: \([t'ænt'æŋi k'a-] , [t'ænt'æŋi tʃ'i-]\)
- be nosy: \([k'ops'ari k'i-]\)
- drink (liquor): \([k'ɔk-]\)
- stay awake overnight: \([nɔlɔmb k'a-]\)
- coin-gambling: \([p'əktʃiɡi]\)
- get separated/divorced: \([sæŋ k'a-]\)

6. Newly Coined Slang Expressions involving Tensing/Aspiration (in addition to the examples in (12))

- policeman: \([c'aps'æ]\)
- duel, fight: \([matc'æŋ]\)
- very: \([dæt'æ]\]
- ignore: \([s'ip-]\)
- older generation: \([not'æŋ]\)
- save: \([c'əŋbæk-]\)
- ugly: \([hic'ugri]\)
- salvager: \([c'iks'æ]\)
- nightclub attendant: \([p'ik'i]\)
- lack: \([k'uli-]\)
- anniversary party: \([p'æŋ]\)
- be gorgeous: \([s'ækk'unha-]\)
- head, chief: \([c'æŋ]\)
- watch for others: \([c'əŋbo-]\)
- vow: \([əmtʃhaŋ]\)
- be knowledgeable: \([p'asakha-]\)
- influence, power: \([k'ʌtrp'æl]\)
- army, infantry: \([t'æŋk'æ]\)
- assistant: \([t'ak'ari]\)

- finish: \([p'ojak na-]\)
- back-stage dancer: \([p'ækk'ari]\)
- very: \([dæt'a]\)
- ignore: \([s'ip-]\)
- older generation: \([not'aŋ]\)
- save: \([c'əŋbæk-]\)
- ugly: \([hic'ugri]\)
- salvager: \([c'iks'æ]\)
- nightclub attendant: \([p'ik'i]\)
- lack: \([k'uli-]\)
- anniversary party: \([p'æŋ]\)
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