

A Study of Valence & Argument Integration in Chinese

Verb-Resultative Complement

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Abstract

Verb resultative complement (VC) is a common structure of Chinese language with abundant forms of collocation. It makes much sense for VC research to analyze the general rules of argument integration in light of diversities of predicate & complement and the complexity of argument integration in the forming of VC with predicate & complement. This article has analyzed and summarized the existing research outcome of VC, and then gives further analyses thereby on argument integration process and multi-valence phenomena.

1 What's a Verb Resultative Complement?

Concept of “Verb-Resultative Complement (VC)” was initially brought out by Lv Shuxiang in 1980, who has defined it as a phrase verb consisting of “a main verb plus a resultative adjective or verb”. Zhu Dexi has initiated later in 1982 that VC includes in a broader sense the structure of a predicate verb followed immediately by complements, i.e. either resultative complements as in “学会(xué huì, study and grasp)、吵醒(chǎo xǐng, make noise and awake)” or tendential complements as in “走来(zǒu lái, come up)、飘进(piāo jìn, float in)”. Therefore VC is in brief a structure of a fore predicate (mostly a verb or an adjective) to indicate an action, plus a rear complement to indicate the result of such action.

2 Existing Studies of VC Valence

Verb valence is a hot theme in study of contemporary Chinese with popular academic concentrations, as VC is provided with not only distinct characteristics of verbs but also features of phrases, which has thus added more complexity in valence than normal verbs. Wherein, Huan Jinzhang in an early study (in 1993) has examined the collocations of “mono valence predicate + mono valence complement” and “bi valence predicate + mono valence complement”. Despite the restrained scope of study, his article has initiated multi feasible dimensions to the study of VC valence, for example, looking into with co referral relations the valence alterations in predicate & supplement combination, or with argument's sequence of entering into a perspective field the argument integration & disappearance during VC integration: these are well inspiring for the studies later on.

Then, Guo Rui (1995) and Wang Hongqi (1995) have each brought out an analyzing scheme of VC valence in the book of *Study of Valence Grammar in Contemporary Chinese*, wherein Guo's introduction of location argument is well worthy of concentration. According to Guo, certain predicates and complements in VC can be added with a location argument, e.g. bi valence verbs like “来(lái, come)/去(qù, go)、走(zǒu, walk)/跑(pǎo, run)” and tri valence verbs like “挂(guà, hand)、放(fàng, lay)” can be all added with an argument of location or destination of the action. Introduction of the location argument is perfect for the actual valence demand of predicate and complement, but however is skipped in most studies.

According to Wang Hongqi (in 1995) who has brought out multi new concepts of VC, the

complements' argument is virtual rather than ostensive for a VC with complement of a verb like “好(hǎo)、见(jiàn)、住(zhù)、动(dòng)、到(dào)”; and furthermore, the complement argument is just the predicate itself rather than a specific item or location for a VC with complement of verbs like “早(zǎo, early)/晚(wǎn, late)、快(kuài, fast)/慢(màn, slow)”, ---- this is a persuasive viewpoint with compliance of actual language usages. However, Wang's article is imperfect for its over reliance on complement during classification, and its negligence in predicate's impact on valence of entire VC, and in alteration of valence form for one complement's collocating with various predicates.

Yuan Yulin (in 2001) has also given detailed analyses on VC valence. He has made in-depth study on categories of VC argument collocation and on access rules in argument assignment. Also he has classified the variations of VC valence into merged, eliminated, and co valences, and the outcome of argument

integration into equal, decreased and increased valences. Terms he has defined are instructive for future studies, however, the article also reveals insufficiency in precise VC studies since it has focused on systems of argument integration.

Favored by plenteous outcome of previous studies, Shi Chunhong (in 2005) has initiated a more perfect new analysis plan, in which he has admitted Wang Hongqi's viewpoint that complement argument can be virtual and could be the predicate, and also numbered up various arguments when the predicate is a tri valence verb. His article has also specified a principle of boundary in argument integration, in addition to detailed functions of boundary principle during the process of argument integration & promotion when predicate and complement arguments are co or disjoint referential.

3 A Scheme of Chinese VC Valence Categories

No.	Predicate Valence	Complement Valence	VC Valence	Predicate Arguments x,y,z	Complement Arguments a,b,c	VC Arguments	Relationship of Predicate & Complement Arguments	Instance
1	1	1	1	Subject	Subject	Subject	co referential x & a	累病 lèi bìng (get tired out, resulting in illness)
2	1	1	2	Subject	Subject	Subject, Object	disjoint referential x & a	哭肿 kū zhǒng (cried badly and get eyes swollen)
3	1	1	1	Subject	Predicate	Subject	None	病久 bìng jiǔ (stay in illness for a long time)
4	2	1	1	Subject, Object	Subject	Subject	co referential x & a; disappeared y	看傻 kàn shǎ (see and get shocked)
5	2	1	2	Subject, Object	Subject	Subject, Object	co referential y & a	点亮 diǎn liàng (lighten)
6	2	1	2	Subject, Object	Subject	Subject, Object, Causer	disjoint referential x, y, a	砍钝 kǎn dùn (chop to get the axe or blade blunt)
7	2	2	2	Subject, Object	Subject, Object	Subject, Object	co referential x& a; co referential y & b	学会 xué huì (get learned)
8	2	2	2	Subject, Object	Subject, Object	Subject, Object	co referential x & a;	玩忘 wán wàng (play a lot /

							disappeared y	happily so that forget)
9	2	1	1	Subject, Object	Predicate	Subject	None	吃早 chī zǎo (eat early)
10	2	1	2	Subject, Object	Predicate	Subject, Object	None	抓住 zhuā zhù (catch, grasp)
11	3	1	1	Subject, Participator, Object	Subject	Subject	co referential x & a; disappeared y & z	教累 jiāo lèi (teach and get tired)
12	3	1	2	Subject, Participator, Object	Subject	Subject, Object	co referential y & a; disappeared z	教坏 jiāo huài (teach something bad)
13	3	2	3	Subject, Participator, Object	Subject, Object	Subject, Participator, Object	co referential y & a; co referential z & b	教会 jiāo huì (teach to get learned)
14	3	3	3	Subject, Participator, Object	Subject, Participator, Object	Subject, Participator, Object	co referential x & a; co referential y & b; co referential z & c	送给 sòng gěi (give to)
15	3	1	1	Subject, Participator, Object	Predicate	Subject	None	教晚 jiāo wǎn (teach late)
16	3	1	3	Subject, Participator, Object	Predicate	Subject, Participator, Object	None	教完 jiāo wán (done with teaching)
17	1	2	2	Subject	Subject, Location	Subject, Location	co referential x & a	活在 huó zài (live in)
18	2	2	3	Subject, Object	Subject, Location	Subject, Location, Object	co referential y & a	拖回 tuō huí (drag back)
19	2	1	1	Subject, Location	Subject	Subject	co referential x & a; disappeared y	走累 zǒu lèi (walk and get tired)
20	2	1	1	Subject, Location	Subject	Subject, Object	disjoint referential x & a; disappeared y	坐麻 zuò má (sit and get body numb)
21	2	2	2	Subject, Location	Subject, Object	Subject, Object	co referential x & a; disappeared y	跑丢 pǎo diū (run and get something lost)
22	2	2	2	Subject, Location	Subject, Location	Subject, Location	co referential x & a; co referential y & b	站在 zhàn zài (stand at)
23	2	1	1	Subject, Location	Predicate	Subject	None	住久 zhù jiǔ (live long)
24	3	1	1	Subject, Location, Object	Subject	Subject	co referential x & a; disappeared y & z	挂累 guà lèi (hang and get tired)
25	3	1	2	Subject, Location, Object	Subject	Subject, Object	co referential z & a; disappeared x	挂满 guà mǎn (hang and get fully distributed)
26	3	1	2	Subject, Location, Object	Subject	Subject, Object	co referential z & a; disappeared y	放歪 fàng wāi (lay in the slanting direction)

Viewpoints of each scholar share both coincidence and divarication in the study of Chinese VC categories. Here on basis of both existing and my personal induction and analyses, VC valences are categorized into 26 types as above¹.

Firstly, I agree with Guo Rui that verbs like “来(lái, come)/去(qù, go)、走(zǒu, walk)/跑(pǎo, run)” etc. are of bi valence as predicates, and those like “挂(guà, hang)、放(fàng, lay)” are of tri valence, because some of them are distinctly oriented and the target of action is indispensable for the verb valence, while others have to rely on specific space or fixed location to get itself done. Previously, most articles have neglected the collocable location argument for verb valence, and instead attribute them all to mono or bi valences, which is not rational.

Secondly, I agree partly with Wang Hongqi that argument of complement can be the predicate of VC, and complement shall mostly define if complement argument is the predicate. For example, “晚”(wǎn, late) as a complement means “later than specified or appropriate time”, and is thus usually not used for specific person or thing. In a VC, be the collocated predicate is “睡”(shuì, sleep) of mono valence, “来”(lái, come) of bi valence, or “教”(jiāo, teach) of tri valence, the argument of “晚” is the predicate instead of anything else.

However, Wang’s article has indicated that given with complement of “好、见、着、掉、住、动、到” etc., the argument of complement shall get virtual, which I won’t however agree. Let’s just take a look at their interpretations according to *Dictionary of Contemporary Chinese*:

1. 好(hǎo): attached after a verb, indicating it has been done or is perfect.
2. 见(jiàn): see, catch sight of.
3. 着(zháo): attached after a verb, indicting the target or result has been achieved.
4. 掉(diào): attached after certain verbs,

¹ We use subject & object instead of agent & patient here because they can also be target, tool, location and some other arguments.

indicating the result of an action.

5. 住(zhù)₁: attached as a complement to a verb, indicating it is fixed or steady.
6. 住(zhù)₂: attached as a complement to a verb, indicating it is stopped or at rest.
7. 动(dòng): changing the original location or appearance of things.
8. 到(dào): attached as a complement to a verb, indicating the action has got its result.²

According to the interpretations above, targets of “好、着、掉、住₁、到” can be all viewed as the predicates of VCs, e.g. “(某动作)使得事物牢固” ([certain action] gets something fixed). Despite its indistinct interpretation, “见” as revealed by its roles in “看见(kàn jiàn)、听见(tīng jiàn)” etc. can be deemed as getting certain actions with a result, so its valence argument is also the predicate. On the other hand, for “住₂” and “动”, be it indicating being stopped, at rest or changing the location, its target argument should be a specific subject argument, which is also the subject argument of predicate. Therefore, it is my opinion herein that argument of complement won’t get virtual.

4 Valence Integration Process of Chinese VC

Obviously, VC predicate and complement arguments are often co referential. As languages would avoid repetitions as much as possible, co referential arguments would be definitely combined when they are united to form a VC, which is defined as “argument integration” herein. Meanwhile, as argument of certain complement is predicate, the predicate has met with valence demand of complement when forming the VC, and the complement is about provided with zero valence, the type of which is named as “complement of fake zero valence” herein.

In summary of the chart above, if complement’s fake zero valence is deemed as a real zero valence, argument variations can be classified into two categories in the forming of VC:

² All these interpretations are quoted from *Dictionary of Contemporary Chinese* version 2002.

1. After argument integration, quantity of VC arguments (C_{VR}) shall reduce no more in relative of quantities of predicate arguments (C_V) and complement arguments (C_R), i.e. $C_{VR} = C_V + C_R - C_{V\&R}$ ($C_{V\&R}$ is the quantity of co referential arguments of predicate and complement);

2. After argument integration, still quantity of VC argument shall reduce in relative of arguments of predicate and complement, i.e. $C_{VR} < C_V + C_R - C_{V\&R}$.

In the first category, argument integration is a simpler and regulated process. If predicate and complement have no co referential arguments,

subject argument of predicate shall be projected before the predicate, and argument of complement projected after the complement. If they have, arguments shall be integrated first, then the subject argument of predicate shall be projected before predicate, and the object argument of predicate and argument of complement projected after the complement.

In the second category, occasions are sorted as following:

1. Predicate and complement have no location arguments:

Predicate Arguments x, y, z	Complement Arguments a, b, c	VC Arguments	Relationship in Arguments of Predicate & Complement	Instance
Subject, Object	Subject	Subject	co referential x & a, disappeared y	看傻 kàn shǎ (see and get shocked)
Subject, Object	Subject, Object	Subject, Object	co referential x & a, disappeared y	玩忘 wán wàng (play a lot / happily so that forget)
Subject, Object	Predicate	Subject	None	吃早 chī zǎo (eat early)
Subject, Participator, Object	Subject	Subject	co referential x & a, disappeared y & z	教累 jiāo lèi (teach and get tired)
Subject, Participator, Object	Subject	Subject, Object	co referential y & a, disappeared z	教坏 jiāo huài (teach something bad)
Subject, Participator, Object	Predicate	Subject	None	教晚 jiāo wǎn (teach late)

On normal occasions during VC integration, subject argument of predicate won't disappear, because the predicate verb is highly motional and vitalized; and be it co referential with the subject argument of complement or not, the agent subject shall be usually the agent of the whole VC. Meanwhile, as there implies that the execution of predicate verb has brought in the outcome of complement, complement object as receiver of resultative complement shall usually enjoy priority to be promoted as VC's object. If the complement has no object, then its subject shall enjoy priority to be promoted accordingly. During the promotion, predicate object which is not co

referential with the subject or object of complement may be often sifted out, for when $C_{VR} < C_V + C_R - C_{V\&R}$, target concerned with predicate's object isn't a must for action provider and result receiver. For example in “玩忘” (wán wàng, play a lot / happily so that forget), two actions “玩” (play) and “忘” (forget) are involved with VC, their object arguments are co referential, and the provider of VC action is promoted as subject of VC. Now there remains only one idle valence digit in VC, so the object argument of either “玩” or “忘” should be sifted out since they are disjoint referential. Target of “忘” is more critical since the whole VC is about a psychological process,

while that of “玩” isn’t directly involved with whole VC and is thus sifted out.

However sometimes even if the argument of VC isn’t fully occupied, the object argument of predicate may be also sifted out, because the causing even indicated by predicate verb may not only function on other items, --- it may also function on itself. For example in “看傻” (kàn shǎ, see and get shocked), the whole VC indicates a provider of action “看” (see) has received the result of “傻”

(get shocked) from such process, which means the result of “看” has functioned directly onto the provider of the action “看”. Therefore, only the provider of such action is directly involved with status of “看傻”, while content of “看”, which is not direct participator of process “傻”, is sifted out during integration.

2. Predicate and complement have location arguments:

Predicate Arguments x, y, z	Complement Arguments a, b, c	VC Arguments	Relationship in Arguments of Predicate & Complement	Instance
Subject, Location	Subject	Subject	co referential x & a, disappeared y	走累 zǒu lèi (walk and get tired)
Subject, Location	Subject	Subject, Object	disjoint referential x & a, disappeared y	坐麻 zuò má (sit and get body numb)
Subject, Location	Subject, Object	Subject, Object	co referential x & a, disappeared y	跑丢 pǎo diū (run and get something lost)
Subject, Location	Predicate	Subject	None	住久 zhù jiǔ (live long)
Subject, Location, Object	Subject	Subject	co referential x & a, disappeared y & z	挂累 guà lèi (hang and get tired)
Subject, Location, Object	Subject	Subject, Object	co referential z & a, disappeared x	挂满 guà mǎn (hang and get fully distributed)
Subject, Location, Object	Subject	Subject, Object	co referential z & a, disappeared y	放歪 fàng wāi (lay in the slanting direction)

Arguments in the chart are sifted out similarly with the foregoing. If the complement is not a direction verb, the location or target location of predicate verb is less critical for the VC signification when compared with the action provider and result receiver, and would be sifted out when idle valence digit is insufficient. However there is one single exception: if the complement is “满” (mǎn, -ful), the predicate agent subject shall be sifted out instead during argument integration, and the location & object arguments of predicate shall be both preserved. This is because “满” is highly stateful, would decrease the procedural property of collocated predicate, and tends to indicate an immobile rather than dynamic processes. And on such occasions, it is the location and object arguments of predicate as direct participators of

status that serves as necessary elements for completion of VC.

In summary of above, we can conclude that VC valence integration follows about such priorities:

VC Subject: predicate subject > predicate object

VC Object: complement object > complement subject > predicate object

Wherein, VC subject comes only from the original arguments of predicate, and the object mostly from original arguments of complement. The reason lies in that the predicate is the trigger of VC, and its subject is more vitalized and causative than the object, while complement is a result from predicate, and its object is less vitalized and more passive than the subject.

5 Multi-Valence of VC

Section II has mentioned some potential relations between arguments of VC and of its predicate & complement, however, this is far more complicated in actual language circumstances. Common multi-valences of VC are summarized and classified as following:

1. Multi-valence resulted from semantic differences of predicate or complement, e.g. “气死” (qì sǐ, get badly annoyed or annoyed to death), “饿死” (è sǐ, get badly starved or starve to death), and “跑丢” (pǎo diū, run and get something lost) etc.

Such predicates have usually dual types of usages: active and passive. For example in the *Dictionary of Contemporary Chinese* version 2002, “气(qì)” includes these two interpretations: “气₁: 生气; 发怒” (get angry; lose temper) and “气₂: 使人生气” (get somebody annoyed). Wherein, we can recognize easily, “气₁” is a mono valence verb, while “气₂” is a bi valence verb, thus resulting in the two sentence patterns of “气死” as following:

(1) a. 周瑜气死了。

(Zhou Yu gets angry badly.)

b. 诸葛亮气死了周瑜。

(Zhuge Liang gets Zhou Yu annoyed rather badly till death.)

Complement on such occasions has also two potential valences. For example in “跑丢(pǎo diū)”, “丢” can be of either bi valence, indicating get something lost, or mono valence, indicating get him/herself lost or dropped from teammates:

(2) a. 我跑丢了鞋。

(I run and get my shoes lost.)

b. 我跑丢了。

(I am dropped from my teammates.)

2. Some VCs gain more arguments via verb copy structures, e.g. “来早” (lái zǎo, come early) and “点亮” (diǎn liàng, lighten) etc.

“来” (lái, come) is a bi valence verb, while argument of “早” (zǎo, early) is just “来”. On normal occasions, the location argument of “来” would be sifted out, but we may also get it into

VC with a verb copy structure:

(3) a. 我来早了。

(I come here early.)

b. 我来学校来早了。

(I come to school early.)

“点(diǎn)” is a bi valence verb, and “亮(liàng)” indicates the status and could be collocated with only one argument. On normal occasions, the object of “点” and the subject of “亮” are co referential, however, if they are disjoint referential, a verb copy structure shall be relied on for signification:

(4) a. 我点亮了灯。

(I turn the light on.)

b. 我点烟花点亮了夜空。

(I lighten the dark sky with fireworks.)

3. Complement argument of VC may have various designatums, e.g. “练结实” (liàn jiē shí, exercise and get strong), “唱红” (chàng hóng, sing songs and get popular) and “哭醒” (kū xǐng, cry and get awoken).

It can be classified even further into two categories.

In Category I, various designatums of complement have meronymy. For example in “练结实”, “结实” (strong) can refer to either the object argument of predicate “(我的)肌肉” (wǒ de jī ròu, [my] muscles), or generally the subject argument of predicate “我” (wǒ, me):

(5) a. 我练结实了。

(I do exercises and get strong.)

b. 我练结实了肌肉。

(I do exercises and get my muscles strong.)

In Category II, various designatums of complement are disconnected. For example in “哭醒”(kū xǐng), both “哭” and “醒” are mono valence verbs, involve only one subject argument, and can be however either co or disjoint referential.

(7) a. 宝宝哭醒了。

(The baby cries and gets him/herself awoken.)

b. 宝宝哭醒了妈妈。

(The baby cries and gets his/her mom awoken.)

4. Subject argument of VC may have various

designatums, e.g. “问倒” (wèn dǎo, beat with questions) and “撬断” (qiào duàn, prize and break). On such occasions, the predicate is sometimes of tri valence, e.g. “问倒”. When the VC has been formed, the subject of VC can be either the subject or the object of predicate:

(8) a. 我问倒了孩子们。

(I beat the children with questions.)

b. 这个问题问倒了孩子们。

(The question gets the children napping.)

On other occasions, arguments like methods or tools etc. may be involved, and such arguments can be either subject or object of VC. For example in “撬断(qiào duàn)”, object argument of “撬” is the tool: if it acts as subject argument of VC, it shall be disjoint referential with subject argument of “断”; if acts as object argument, it shall be co referential with subject argument of “断”; and meanwhile, it may also disappear from VC:

(11) a. 铁棍撬断了保险杠。

(Bumper is prized and broken with an iron stick.)

b. 他撬断了铁棍。

(He prizes something with an iron stick and gets the stick broken.)

c. 他(用铁棍)撬断了保险杠。

(He prizes and gets the bumper broken [with an iron stick].)

In light of the four occasions above, Tao Hongyin's "Assumption of Dynamic Argument Structure" (in 2000) can be well demonstrated in VC.

Firstly, argument structure in a verb of high frequency is more tendential of unsteadiness: a high frequency verb tends to have multi interpretations, so is easily open to multi-valence category I; it is more flexible and is used fairly repeatedly, so is easily open to multi-valence category II and IV.

Secondly, a verb is more often combined with typical arguments and less often with non-typical ones. The ones which enter into VC valence are mostly highly typical arguments like subject, object and participator etc.

Thirdly, variation of argument structure would involve first the argument most adjacent to the core: provided with multi-valence in adding of arguments, priority shall be usually the subject or object arguments (they are more adjacent to the core), and then the location or tool arguments which are farther to the core if subject & object arguments are both available or if the predicate or complement itself cannot share valence with either arguments.

Furthermore, expansion of argument structure tends to have particular marks of sentence pattern, and multi-valence category II has provided the best instance: expansion of such VC argument structure has to rely on verb copying, or is otherwise illegal.

Finally, variation of sentence pattern is often in parallel with that of semantics: for example, multi-valence category I itself is based on semantic deviations of predicate or complement, and in multi-valence category 3, “宝宝哭醒了” (The baby cries and gets him/herself awoken.) indicates the status alteration of “宝宝” (baby) from “睡” (shuì, asleep) to “醒” (xǐng, awoken), while “宝宝哭醒了妈妈” (The baby cries and gets his/her mom awoken.) indicates status alteration of “妈妈” (mom) from “睡” to “醒”.

As we can see, forming of a VC is fairly flexible, but meanwhile, all these forming are carried out as per a unique principle of integration.

6 Significations in Analyses & Study of Chinese VC Valences

In summary, the VC valence-argument integration methods, though fairly abundant, they have also rules available. Classification of common predicates and complements and summarization of rules in VC argument integration would help verifying the legality of VC sentences with computer. On the other hand, predicate and complement which enter into VC are often verbs, however conjunction of two verbs would form very abundant new structures, e.g. successive predicate structure, parallel

structure, predicate-object structure, and adverbial-core structure etc. Classification and study of VC valence methods would help identifying the features of VC argument integration, and thus eliminating ambiguities with computer.

Besides, since a series of predicate or complement with similar semantic fields are provided with relatively typical methods of argument integration, we may also generalize VC by calculating distances between words, and thus presume the property and semantics of unregistered words, which would be also very helpful for auto analyses of these unregistered words.

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