Semantic and Pragmatic Function Analysis of Sentence-Final Particle Combinations: 
the Cases of Japanese yone and Cantonese gaa3-wo3

1. Introduction
Sentence-final particle (SFP) is a distinctive feature in various languages, including Japanese and Cantonese. The particle’s usages and syntactic properties have been receiving ample attention in the linguistic studies in both languages.

The importance of SFP to the two languages can be reflected on its pragmatic functions. Matthews and Yip (1994) summarise that the functions of Cantonese SFP are ‘indicating speech-act types’, giving ‘evidentiality’ and adding ‘affective and emotional colouring’. By suffixing SFP, a declarative sentence will become an interrogative (Japanese SFP ka in example (1)) or carry certain emotions (Cantonese SFP tim1 in example (2)).

(1) nyusu o mimashita ka 
news ACC watched SFP
Did you watch the news?

(2) keoi5 zung6 sik1 faat3-man2 tim1 
he/she even know French SFP
And he/she even knows French!

Other than suffixing a sentence, some linguists suggest that SFP should be named ‘utterance particles’, given that they are more relevant to the utterance under particular speech contexts rather than the sentence itself, and that their interpretations depend largely on contexts. In the thesis, I will focus on the usage and analysis of the particles that come after the utterance, yet the argument of these linguists is also noteworthy, as it manifests the close relationship between SFP and speech contexts, which is an essential assumption in my analysis.

The presence of SFP combinations is a similarity between the two languages. In Japanese, most SFP are used individually, while some of them can be used in combinations, e.g. kana and yone; most Cantonese SFP can be used in combinations, like zaas3-gwaas3 and gaa3-laas3-bo3, while the combinations may even consist of as many as 4 individual SFP (Matthews & Yip, 1994). According to McCready & Davis (in press), SFP combinations impose even more complex pragmatic functions based on their components.

(3) (Said by passenger in car)
   nei5 sik1 heoi3 ge3-laa1-maa3 
   you know go SFP
   You do know the way, don’t you?

   (Matthews & Yip 1994:344)

Example (3) is suffixed with three Cantonese SFP, ge3, laa1 and maa3. Each of the three particles carries different functions, and if they are used individually or in different combinations, they will impose different effects to the utterance. For instance, if only maa3 follows the utterance, it will be expressing the speaker’s concern about whether the hearer knows the way; if ge3-laa1-maa3 is used, as in (3), the utterance indicates that the speaker has certain belief on the hearer’s state of knowledge of the way, and the question is merely to confirm the speaker’s belief with the hearer.
Despite their similarities in functions and usages, very few studies examine SFP in Japanese and Cantonese together. In the thesis, I will study the semantic and pragmatic functions of the SFP combinations in the two languages. The aim is to answer the following question: what are the differences in semantic and pragmatic effects between SFP combinations and their individual component particles? This may help to find properties shared by SFP of both languages, which is perhaps also applicable to SFP in other languages.

Among various SFP combinations, I will focus on and closely study two of them: yone in Japanese and gaa3-wo3 in Cantonese. The research question will be further elaborated with these two combinations in the next section. In chapter 2, I will look into the previous studies on the combinations. The methodology used in the analysis will be explained in chapter 3. Chapter 4 will be the analysis of the two SFP combinations, and the additional usages that are not covered will be elaborated in chapter 5. The analysis and findings will be concluded in the last chapter of the thesis.

1.1. The cases of Japanese yone and Cantonese gaa3-wo3

The Japanese particle yone has received perhaps the most attention among the Japanese SFP combinations. One of its components yo is often deemed as suggesting that the proposition of the utterance is known to the speaker exclusively (Kamio, 1994; McCready & Davis, in press).

(4) Kyoto no jinkou wa 150-man gurai desu yo
Kyoto of population TM 150.ten-thousand about is SFP
The population of Kyoto is about 1,500,000.

(Kamio 1994:73)

On the contrary, another component ne is often used to seek confirmation from the hearer (McCready & Davis, in press).

(5) anata wa kibun ga warui-mitai desu ne
you TM feeling NM bad.look is SFP
It looks like you are feeling sick, aren’t you?

(Kamio 1994:93)

As the combination of the two particles, yone has a seemingly ‘contradictory’ semantics, for that yo suggests the proposition is known to the speaker exclusively, and that ne suggests the proposition is known to the hearer. While the semantic composition is still debatable, the combined particle yone seems to at least inherit some semantic and pragmatic functions from both component particles.

(6) aitsu to isshoni iku yone
he with together go SFP
(You will) go with him, right?

(McCready & Davis in-press:23)

The speaker in example (6) knows about the proposition that the hearer will go with ‘him’. Meanwhile, he/she intends to confirm this proposition with the hearer. The functions of individual yo and ne can be seen here, yet those of the combination yone are somehow distinct from either yo or ne: if yone at the end of (6) is replaced by yo, the utterance is no longer used to ask for confirmation from the hearer, but to provide information; if it is replaced by ne, it becomes a question simply confirming the proposition

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1 There are several variations of gaa3-wo3, including ge3-wo3, ge3-bo3, go3-bo3 and gaa3-bo3. They are all treated as gaa3-wo3 in this thesis, unless in the cases where wo3 and bo3 are not interchangeable in certain contexts (Matthews & Yip, 1994; Sybesma & Li, 2007). The phonetic modifications of gaa3 are caused by other sounds in the particle combination (Kwok, 1984).
with the hearer, without suggesting that the speaker has certain level of knowledge initially regarding the proposition. Therefore, the use of yone seems to have properties different from yo and ne.

As for the Cantonese SFP combination gaa3-wo3, there are relatively fewer specific studies on it comparing to yone. Nevertheless, just as the Japanese combination, the Cantonese SFP gaa3-wo3 also appears to have richer semantic and pragmatic functions than its individual component particles.

Fung (2000) suggests gaa3 ‘assumes that the hearer has no knowledge of a situation that should have been known and is a given (as opposed to a new) situation’, as in the below example from a leaflet about health and safety of courier service staff.

(7) gung1-si1 tai4-gung1-ge3 seon3-gin2-doi6 dou1 hou2 zung6-jiu3 gaa3 company provided.by mailbag also very important SFP
The mail bag provided by the company is important too.

Wo3 is often deemed to be used as a reminder, in which the hearer knows the proposition, which is ‘to drive carefully’ in example (8). The speaker yet brings it up in case the hearer forgets about it.

(8) lei5 siu2-sam1 za1-ce1 wo3 you careful drive.car SFP
Drive carefully!

(Matthews & Yip 1994:354)

Like yone, the Cantonese SFP combination gaa3-wo3 has more semantic and pragmatic functions than its components, gaa3 and wo3, when they are used individually.

(9) lei1 sau2 gol m4-ji6 coeng3 gaa3-wo3 this CL song not.easy sing SFP
This is not an easy song to sing! (Are you sure you’re going to sing it?)

If gaa3-wo3 in example (9) is replaced by gaa3, the utterance will emphasise the speaker’s opinion on the song (Matthews & Yip, 1994). If wo3 is used instead, the utterance will function as a reminder, and show the urge for the hearer to accept the proposition. However, gaa3-wo3 in (9) emphasises its relationship with the hearer’s decision or action, and implies the speaker’s doubt of such decision or action. This can be seen as beyond the functions of individual gaa3 and wo3.

From the two examples, it appears that the semantic and pragmatic functions of SFP combinations may not be simply a mix of its components’ functions, as suggested in Matthews & Yip (1994). Rather, there seems to be unique functions that are not inherited from the components, but belongs exclusively to the combination itself.

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2 In Matthews & Yip (1994), gaa3 is regarded as a combination of ge3 and aa3. This will be further elaborated in the next section.
2. Literature reviews
To study the differences in functions between combined SFP and their individual components, it is essential to first examine their functions individually and in combinations. In this chapter, I will review the previous studies of the four individual SFP, *yo*, *ne*, *gaa3* and *wo3*, and of the two combinations.

2.1. Japanese SFP: *yo*, *ne* and *yone*

2.1.1. Kamio (1994)

Kamio proposes the theory of ‘territory of information’ regarding the natures of several Japanese SFPs. Individual SFP *yo* and *ne* are two of them.3

For declarative sentence that ends with a main predicate and is followed by *yo*, Kamio defines the information carried by the utterance as \(1 = \text{Speaker} > \text{Hearer} = 0\), where 1 and 0 indicate how close the information in the propositional content is in the speaker’s or hearer’s territories of information, i.e. the information is known more by the speaker or the hearer. In *yo*-attached utterance, the information is completely in the speaker’s territory of information, while not, in any way, in the hearer’s territory, meaning that it is known by the speaker only. The following is one of the examples.4

(10) watasi, atama ga itai yo
I head NM ache SFP
I have a headache.  
(Kamio 1994:87)

As for declarative sentence followed by *ne*, the nature of the information was defined as \(n < \text{Speaker} \leq \text{Hearer} = 1\), where \(n\) is the ‘threshold value for the speaker’s/hearer’s territory’. Kamio further divides *ne*-utterance into two subcases:

(i) the information is completely in both speaker’s and hearer’s territories, and;

(ii) the information is completely in hearer’s territory, but only partially in speaker’s territory.

The two subcases are illustrated below respectively:

(11) ii tenki da ne
nice weather is SFP
It’s a beautiful day!  
(Kamio 1994:88)

(12) kimi, sukosi yaseta ne
you a little lost-weight SFP
You have lost a little weight, haven’t you?  
(Kamio 1994:89)

In his theory, Kamio suggests that the particle *yo* can be added to the end of utterance in direct form by option, yet does not further explain *yo*’s usages and effects to the utterance. If we take (10) as an example, what would be the change in semantic and pragmatic effects if *yo* is dropped? To Kamio, there seems to be no rules governing the use of *yo*, as he suggests that it can be randomly added to any

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3 This thesis will focus on the use of *yo* and *ne* in, as proposed by Kamio, direct form of utterance, namely that ‘expresses the information in a direct and definite form’, without presumption or hearsay.

4 *Yo* is not in the original example given by Kamio and is only added in this thesis for explanation purpose, based on Kamio’s view that *yo* can be added to direct form of utterance by option.
utterance in direct form, but has not further explained how or whether the utterance will be affected by the use of *yo*.

(The husband looks out of the window and tells his wife)

(13)  

\[
\text{ame ga futtekita yo}
\]

\[
\text{rain NM fall-come SFP}
\]

It’s raining, you know.  

(Katoh 2001:44)

In the above example, the use of *yo* does not necessarily manifest that the information is completely in the speaker’s territory of information. Rather, the weather can be easily observed by the hearer, thus such information can be in the hearer’s territory as well. The use of *yo* here is more likely to draw the hearer’s attention to the current weather, yet such effect imposed by *yo* was not considered in Kamio’s theory.

(14)  

\[
\text{kyou wa samui ne}
\]

\[
\text{today TM cold SFP}
\]

It’s cold today, right?  

(Katoh 2001:47)

Also, it is debatable whether a piece of information can be quantified. Even if, as proposed by Kamio, information can be quantified to determine whether it is closer to the speaker’s or the hearer’s territory of information, the result produced may not be significant enough to make comparison possible. For example, it is hard to tell whether the ‘cold weather’ is more ‘known’ to the speaker or the hearer of (14), if both parties are experiencing the cold weather at the same time.

### 2.1.2. McCready & Davis (in press)

Kamio’s theory is somehow echoed in McCready & Davis, where *yo* and *ne* are deemed to have a rather oppositional nature. According to them, *yo* is a speaker-oriented particle which is ‘focused on information possessed by the speaker’. It expresses the speaker’s desire for the hearer to accept such information in the propositional content.

(15a)  

\[
\text{A: saki John ga kaetta}
\]

\[
\text{just.now John NM went.home}
\]

John just went home.

(15b)  

\[
\text{B: uso}
\]

\[
\text{lie}
\]

No way!

(15c)  

\[
\text{A: kaetta yo}
\]

\[
\text{went.home SFP}
\]

He did go home!  

(McCready & Davis in-press:8)

In (15c), the declarative utterance is used to seek hearer’s acceptance of the proposition. Receiving denial from the hearer, the speaker adds *yo* to the original utterance (15a) so as to make his desire for the hearer to accept the proposition more explicit.

McCready & Davis consider *ne* as a hearer-oriented particle which has a function different from *yo*. *Ne* is usually used to ask for confirmation or agreement from the hearer.
However, they also pointed out that *ne* possesses some speaker-oriented nature.

(17) koko no gyouza wa umai ne, yappari
here of dumplings TM good SFP as.expected
The dumplings here are good right, like I thought.

(18) kono hon ashita mottekimasu ne
this book tomorrow take-bring SFP
I’ll bring this book tomorrow, OK?

In (17), the proposition of the utterance is known to the speaker. As an expression of realisation, it is not used by the speaker to seek confirmation from the hearer, even though *ne* is used. Also, in (18), the proposition is, again, known to the speaker. Moreover, it is very likely that the hearer does not know it before it is uttered by the speaker. In other words, the proposition is not known to the hearer.

McCready and Davis therefore argue that instead of defining *ne* as hearer-oriented, *ne* should be regarded as a marker of utterance whose proposition is known to the hearer, and in some cases, the speaker. They suggest that *ne* with a rising intonation indicates hearer orientation by asking for hearer confirmation. However, the relationship between *ne*’s intonations and speaker/hearer orientations is not applicable to all situations, e.g. interrogatives, and more comprehensive studies should be done to construct a more concrete theory.

### 2.1.3. Davis (2009)

Davis argues that the particle *yo* has different semantic effects depending on its intonation: the rising *yo* (*yo↑*) and the falling *yo* (*yo↓*). In both cases, *yo* encodes an update to the hearer’s belief with the information in the propositional content provided by the speaker. The distinction between the two variations is that the use of *yo↓* has an additional condition: the speaker assumes the hearer had a prior belief inconsistent with the proposition, whether such belief is explicitly manifested or inferred from the context.

(19a) A: sooridaijin ga nakunatta
prime.minister NM died
The prime minister died.

(19b) B: shinde nai yo↓
die NEG SFP
(No,) He did not die.

(Davis 2009:336)

(20a) A: gohan mou tabetta
rice already ate
Did you eat already?

(20b) B: tabetta yo↑
ate SFP
(Yeah,) I ate.

(Davis 2009:336)
In (19b), the use of yo↓ is based on speaker B’s assumption that speaker A had a public belief which contradicts the proposition in speaker B’s utterance, i.e. the prime minister did not die, and reflects the need that the hearer must ‘downdate’ such contradicting belief before updating it with the new information provided by speaker B. As for yo↑ in (20b), it is based on speaker B’s assumption, from the context or other evidence, that speaker A did not hold a contradicting public belief. The yo↑ simply indicates an update to such belief.

The speaker’s assumption of the hearer’s belief on the proposition proposed by Davis seems to be a more observable, thus testable theory, comparing to information ownership proposed in Kamio and McCready & Davis. However, Davis’ theory is not applicable to SFP combinations, as the intonation of yo is much less obvious when it is used in combinations, including yone.

(21) aitsu to isshoni iku yone
    he with together go SFP
    (You will) go with him, right?  

(=6)

Yo in the combination yone in (21) is difficult to be determined as having either a rising or a falling intonation. It is thus not easy to tell what the speaker’s assumption of the hearer’s belief is by applying Davis’ theory. Although applicable to individual yo, Davis’ theory cannot explain the semantics of yo when it is a component of SFP combinations. Focusing on the use of yo, he did not provide further analysis on the use of ne either.

2.1.4. Katagiri (2007)

Apart from the more widely accepted semantics of ne that is said to be seeking confirmation, Katagiri proposes that ne can also be used in assertions, indicating the proposition it follows is not ‘wholeheartedly accepted’ by the speaker yet, in contrast to yo which indicates it is accepted by the speaker. The incomplete acceptability may be due to information source not yet verified by the speaker, thus he/she uses ne to clarify that he/she ‘is not yet committed to the truth of the information content’.

(22a) kaigi wa 6-gou-shitsu desu yo
    meeting TM room.6 is SFP
    The meeting will be held in Room 6.

(22b) kaigi wa 6-gou-shitsu desu ne
    meeting TM room.6 is SFP
    (I think) The meeting will be held in Room 6.

(Katagiri 2007:1314, modified)

The speaker in (22a) uses yo to show that he/she is certain about the truth of the proposition. A possible context can be that he is in charge of holding the meeting, which makes him a reliable source of the information about where the meeting will take place. In (22b), using ne manifests the speaker’s uncertainty of the proposition. Although he is providing information about the meeting location, which he has knowledge of, he may have learned it from an outside source (e.g. notice of the meeting) that makes him less certain about the truth of the proposition. He then uses ne to ask for the hearer’s input, so as to ‘make [the information in the propositional content] a reliable and mutually believed fact’.

Similar to Davis’ theory, Katagiri proposes that intonation also contributes to ne’s semantics effects. According to him, ne with a rising intonation (ne↑) is used to ask for confirmation, while falling ne (ne↓) indicates an assertion with incomplete speaker’s certainty.
With ne↑, the speaker of (23a) is asking for confirmation from the hearer on the proposition of the meeting location. The ne↓ in (23b) does not refer to a question, but a statement made by the speaker, even though the speaker is not absolutely sure about the truth of the proposition. However, as in Davis’ theory, Katagiri’s analysis of ne may not be applicable to yone, as it is difficult to determine whether ne has a rising or falling intonation in the SFP combination. His analyses of yo and ne regarding certainty of the proposition also contradict each other, and cannot explain why the two particles may be used as a combination.

2.1.5. Katoh (2001)

The view that the use of yo and ne are determined by whether the proposition is the speaker’s or hearer’s knowledge is not accepted by Katoh. He explains this with the following example:

(A and B are eating in a restaurant)

(24a) A: kono ryouri, sugoku oishii yo / ne
    this dish very tasty SFP
    This dish is really good. / This dish is really good, right?

(24b) B: souda ne. oishii ne */yo
    yes ne tasty SFP
    Yeah, it’s good.

(Katoh 2001:40)

In (24), both speakers A and B have knowledge of a mutual experience. When talking about the shared experience, speaker A can use either yo or ne in his/her utterance, yet speaker B can only use ne, while using yo will be unnatural. It appears that there is inconsistency between the use of yone in this scenario and such information being in the speaker’s/hearer’s territory of information, despite their relationship claimed by Kamiö.

Instead, Katoh argues that yo and ne are related to the pragmatic function ‘exclusive knowledge management’. Since only the speaker has the priority in accessing the information within the utterance, he/she has the responsibility to perform knowledge management of the authenticity and acceptance of the proposition, and to recognise the unnecessity of discussion about the proposition.

According to Katoh, yo acts as a discourse marker which indicates that the speaker is ready to perform exclusive knowledge management to the proposition, while ne indicates that the speaker has no intention to do so. Speaker A in example (24) starts the conversation, thus he/she is deemed to have the priority in accessing the information ‘the dish is good’ and he/she can use yo to indicate the intention to perform exclusive knowledge management, or ne to show the lack of such intention. On the contrary, speaker B does not have such priority, given that it is speaker A’s opinion on the dish. Therefore, he can only use ne to express his agreement to the proposition.

(25) kyou wa samui yone
    today TM cold SFP
    It’s cold today, isn’t it?

(Katoh 2001:46)
In the case of (25), the feeling of cold is the speaker’s own judgement, and the judgements of other people do not affect what the speaker feels. As the information belongs exclusively to the speaker, yo in the utterance indicates that the speaker is performing exclusive knowledge management. However, it is still possible for others to disagree to the proposition ‘it is cold today’, even though the speaker has exclusive information of his own judgement. With the use of ne, the speaker shows that he/she has no intention to perform exclusive knowledge management to the proposition, also recognises that there may be different judgements from others. According to Katoh, the particle yo follows the proposition as a marker of the speaker performing exclusive knowledge management on the proposition. The yo-attached proposition is then followed by ne which acts as a marker of the utterance’s function, i.e. to seek hearer’s agreement.

However, Katoh’s theory seems to suggest that ne can be added to any utterance of which the speaker has exclusive information, especially on his/her own judgement. If so, yone and ne appear to function similarly and are interchangeable, yet this is not the case under certain circumstances.

(26a) kireina burausu desu ne pretty blouse is SFP What a pretty blouse!
(26b) *kireina burausu desu yone pretty blouse is SFP *What a pretty blouse, right?

(Hearer is wearing a blouse)

The proposition in (26) is apparently the speaker’s judgement on the hearer’s garment. The speaker has exclusive information on the judgement, yet using yone is infelicitous here, while ne is acceptable. This is because what matters here is the hearer’s judgement of what he/she is wearing, rather than the speaker’s (Noda, 1993). From this example, we can see that although yone and ne may have similar functions, they still impose different effects to the utterance and are not interchangeable in all contexts. It is thus necessary to distinguish the differences between them.


Noda argues that the use of yo is not a necessary condition for the speaker to indicate that he/she assumes the hearer does not possess the knowledge already.

(27) watashino tanjoubi wa shigatsu mikka desu yo my birthday TM April third.day is SFP My birthday is on the 3rd of April, you know.

(28) konoaida umi e ikimashi yone. Oboetemasu ka lately seaside to went SFP remember SFP (We) went to seaside lately, right? Do you remember?

As a declarative sentence, example (27) clearly indicates the speaker’s assumption, which is the hearer does not know the proposition. Yo makes such assumption more explicit, yet it does not mean that there will be no such assumption even if yo is not used. Therefore, the use of yo in yone is to manifest clearly that the speaker has the knowledge.

(We) went to seaside lately, right? Do you remember?

From the second half of (28), where the speaker confirms a past experience, we can assume that going to the seaside is something the speaker assumes that the hearer has knowledge of. The utterance is still felicitous if yone is replaced by ne, and indicates that the speaker simply intends to confirm the
information with the hearer. The use of yone here emphasises the knowledge of the hearer went to the seaside is one that originally known to the speaker.

(29a) A: honbano karei wa karai ne
authentic curry TM spicy SFP
Real curry is spicy, right?
(29b) B: karai desu yone
spicy is SFP
It is spicy, indeed.

(Noda 1993:14)

The utterance in (29b) is also acceptable if it is followed by ne, instead of yone. While ne itself already fulfils the function of agreeing to speaker A, yone emphasises that such knowledge is known to speaker B. The use of yone indicates such agreement made by speaker B is based on his/her own knowledge, and he/she may have tasted real curry. His/her agreement is based on direct experience or knowledge with certainty, rather than knowledge obtained from, for instance, hearsay. Therefore, Noda suggests that yo in yone acts as a marker of the speaker’s knowledge, and that yo emphasises such possession of knowledge in the utterance.

2.1.7. Conclusion on the Japanese particles

Simply by reviewing the function of individual yo and ne, the two particles have properties that are not compatible with each other. For example, in Kamio’s theory, ne indicates that the knowledge is completely in the speaker’s territory of information, yet partially under certain circumstances. It is therefore necessary to understand which of these functions are applicable when the particles are used in combinations.

2.2. Cantonese SFP: gaa3, wo3 and gaa3-wo3


Kwok’s studies explain some usages and give examples of SFP found in Cantonese utterance corpus. She considers the semantics of a particle combination should be the sum of the component particles. As many other linguists do, she suggests that gaa3 is the combination of individual particles ge3 and aa3. Ge3 acts as an assertion marker in declarative sentences, which the speaker uses to indicate that he/she believes the statement to be true, as well as ‘strengthen the force of the assertion’.

(30) hok6 zung1-man2 m4-hai6 ji6 ge3
learn Chinese not.be easy SFP
Learning Chinese is not easy, and that is fact.

(Kwok 1984:43)

Ge3 in (30) is not necessary for conveying the proposition to the hearer. However, it stresses the speaker’s certainty on the proposition, which means he/she believes that it is indeed not easy to learn Chinese.

As for aa3, Kwok points out that it does not seem to have much semantic effect imposed on the declarative sentence it is following, but just to soften the utterance.
He’s really scared of going to Japan. (Kwok 1984:46)

In other words, to Kwok, the semantics of gaa3 is the combination of those of ge3 and aa3, i.e. manifesting the speaker’s certainty on the proposition, while softening the utterance so as to make it less abrupt.

Her husband sells cars. (Kwok 1984:46)

The declarative sentence in (32) refers to the information that her husband sells car, which the speaker believes to be true.

From telephone conversations, Kwok observes that bo3, wo3’s variation, can be used to ‘remind the hearer to take something into special consideration’.

You must take into consideration the fact that you have to wait until he graduates and is able to make some money before he is able to pay you back. (Kwok 1984:64)

Rather than a plain statement, the particle bo3 in (33) imposes the effect of reminding to the utterance. It shows the speaker’s intention to ask the hearer to take account the situation that ‘he’ can only pay the hearer back after a while, instead of simply stating the situation without particular concerns.

Although Kwok gives brief accounts on the uses of both gaa3 and wo3, and provides utterance examples where ge3 and bo3 are combined to form ge3-bo3 (a variation of gaa3-wo3), she does not explain much on why it is regarded as a combination of the two particles, instead of an independent particle consisting of two components. Moreover, she proposes that the semantics of an SFP combination is the sum those of its component, yet does not further elaborate on the proposal.

2.2.2. Sybesma & Li (2007)

Sybesma & Li regard ge3 as an ‘actuality marker’, the use of which gives the utterance a higher relevance to the context concerned.

As to those books, Second Uncle will continue to send them to us – for sure, don’t worry about it. (Sybesma & Li 2007:1744)

Without ge3, (34) is simply a declarative sentence stating the proposition of how the books will be dealt with. Using ge3, the utterance ‘addresses reassuringly, some concern expressed in the preceding part of the conversation’. The particle makes the utterance more relevant to the current context.

As for gaa3, they consider it as a softened ge3 with the same effects imposed on the utterance. While making the utterance more relevant to the context, gaa3 gives it a sense of reminding. They also take that view that gaa3 is the combination of ge3 and aa3, and the effect of aa3 is then added to that of ge3.
As the use of aa3 alerts the hearer about the information in the utterance, gaa3 is a ‘smooth-alert’ that gives relevant information to the hearer.

(35) go2 di1 syu1, aa3-jix-suk1 wui5 luk6-zuk6 gei3-faan1-lei4 gaa3 that CL book 2nd.uncle will continue send-back-come SFP You know, as to those books, Second Uncle will surely continue to send them to us. (Sybesma & Li 2007:1745)

Instead of ge3, example (35) uses gaa3, which gives the utterance the effect of reminding the hearer about how the books will be dealt with, no matter whether the hearer is aware of such information before he/she is reminded.

For the use of wo3, Sybesma & Li agree with Matthews & Yip (1994) and Luke (1990) that it is for ‘reminding’ (see (8)) as well as indicating ‘noteworthiness’.

(36) mei5-gam1 sing1-z02 wo3 US-dollar rose SFP Look, the US dollar has gone up! (Matthews & Yip 1994:353)

The utterance in (36) was originally a declarative sentence of a fact observed by the speaker, while the particle wo3 gives it a sense of urging the hearer to be aware of the information.

2.2.3. Luke (1990)

Based on conversation analysis, Luke gives detailed accounts for seven usages of wo3. Due to the length of the section, it is not possible to discuss all usages here. Instead, I will review those most relevant to the analysis in the coming sections – ‘reportings and story-tellings’ and ‘dispreferred turns’.

One of the usages of wo3 suggested by Luke, ‘reportings and story-tellings’, is that it reports or tells circumstances which are out of the speaker’s expectation. The use of wo3 constructs a contrast, either explicitly or implicitly, between what ought to happen and what actually happens.

(The speaker tells a rumour about people getting sick after swimming in a pond)
(37) dim2-zil daix-xat6 le1 go3-go3 dou1 beng6-saa3 wo3 it.turned.out next.day SFP everyone all fell.ill SFP It turned out everyone became ill the next day, all of them. (Luke 1990:208, modified)

Under normal circumstances, swimming in a pond will not make people sick, yet it happened in the story. On top of that, not only one person, but everyone who swam in the pond fell ill – although getting sick ought not to be the consequence of swimming in a pond, it did happen. The use of wo3 here expresses the unusualness of the event when being compared to what normally happens.

Many of the previous studies on the uses of wo3 suggest that it is used to express disagreement of the speaker, yet Luke considers it not accurate. Instead, he suggests it should be called ‘dispreferred turns’. According to him, wo3 indicates a mismatch between what is considered as a norm or rule, and ‘(real or hypothetical) situations or aspects of a situation to which the proposed rule or norm fails to apply’, by either providing evidence or pointing out what was overlooked.
Despite what the counsellor told the speaker, the mother of a teenage boy, that it is normal for her son to be energetic, the mother gives evidence and situation that ‘undermine the validity of the rule’. Although being a teenage boy, her son is not energetic as normal boys are, and does not want to move when his parents take him out to play. What is deemed as the norm does not apply to this situation, thus what the speaker said was not preferred and wo3 is used to give the ‘dispreferred turn’.

(The hearer, who speaks Cantonese, tells the speaker that Cantonese speaker should be able to understand Mandarin to some extent)

What the speaker in (39) said challenges the rule proposed in the previous part of the conversation. Even though she may agree with the rule that a Cantonese speaker can understand Mandarin to some extent, she suggests a situation where such rule cannot be applied to as it usually can. This unusual situation might have been overlooked when the rule was proposed. With the wo3-suffixed utterance, the speaker gives a ‘dispreferred turn’ that challenges what was regarded as true before.

Despite the detailed analysis of the particle wo3, Luke’s studies do not directly address the issue of SFP combinations. In the conversation data he analysed, many of the occurrences of wo3 appear together with one or even more individual particles, including lo3-wo3, gaa3-wo3 and gaa3-laa3-wo3.5 The uses of wo3 in these combinations are analysed individually, yet Luke does not explain whether wo3 being in a particle combination will affect the semantic or pragmatic effects of the combination, or being affected by other component particles.

2.2.4. Conclusion on the Cantonese particles

The individual particles gaa3 and wo3 have been studied extensively, and most of the studies give similar explanations on their properties and usages. Gaa3 is viewed as a combination of ge3 and aa3, thus its use is similar to that of ge3, which is to give certainty to an assertion and enhance relevance to the context, yet with a softened force. Wo3 is regarded as being used for reminding and pointing out noteworthy information.

However, compared to the individual particles, relatively fewer studies are specifically focused on the use of the combination gaa3-wo3. In general, the semantic and pragmatic effects of an SFP combination are deemed to be those of its components, yet, as shown in example (9), such view is not comprehensive to explain why different effects are produced when particles are used in a combination.

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5 Gaa3 in the conversations is transcribed as go3, a variation of gaa3.
3. Methodology

From the previous sections, it seems possible that not all of the semantic and pragmatic effects of an individual particle are applicable to the SFP combinations consisting of it.

In the next chapter, I will first give descriptions, as comprehensive as possible, of the various usages of the four individual particles under study. For each particle, the functions as well as the necessary use conditions will be dissected based on the existing theories, so as to give a precise description for each of the usages. Each usage will then be grouped to give all possible options of the SFP combinations, which allow us to find out which of these usages are applicable to the combinations.

For example, if yo and ne have two usages each, namely yo\textsubscript{A}, yo\textsubscript{B}, ne\textsubscript{A} and ne\textsubscript{B}, there will be four possible combinations of yone’s usages – yo\textsubscript{A} & ne\textsubscript{A}, yo\textsubscript{B} & ne\textsubscript{A}, yo\textsubscript{A} & ne\textsubscript{B}, and yo\textsubscript{B} & ne\textsubscript{B}.

<table>
<thead>
<tr>
<th>Individual particle:</th>
<th>yo</th>
<th>ne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible usages:</td>
<td>yo\textsubscript{A}</td>
<td>yo\textsubscript{B}</td>
</tr>
</tbody>
</table>

Possible combinations of usages:
1. yo\textsubscript{A} & ne\textsubscript{A}
2. yo\textsubscript{B} & ne\textsubscript{A}
3. yo\textsubscript{A} & ne\textsubscript{B}
4. yo\textsubscript{B} & ne\textsubscript{B}

All these possible options will then be examined with utterances containing the SFP combinations yone and gaa3-wo3. As mentioned earlier, the effects of the SFP depend largely on the speech contexts. Therefore, detailed contexts for each utterance will be constructed based on the functions and conditions of each usage of the particles. If the utterance is found felicitous in the context created, it can be deemed that it is a valid combination of usages, and those usages of the individual particles are applicable to the SFP combination. If there are contradictions between the usages of different particle components, thus no contexts or utterances can satisfy all functions and conditions concerned, it can be deemed that such combination of usages is invalid and they cannot be applied to the SFP combination.

Furthermore, the analysis should be able to ‘screen out’ the usages that are not inherited from the individual component particles. These additional usages will then be reviewed with utterances in various contexts. As they are not directly derived from the component particles, these usages can only be pointed out based on intuition. If there are any doubts, informants who are native in Japanese or Cantonese will be consulted for confirmation.
4. Analysis – usages of individual and combined SFP

In this section, the usages of each of the four individual particles, including their functions (marked with F) and necessary use conditions (marked with C), will be detailed. These usages will then be grouped into combinations of yone and gaa3-wo3, and be examined if they are valid, which means they are a possible combination of usages that are applicable to the SFP combination.

4.1. Japanese SFP: yo, ne and yone

4.1.1. Usages of individual SFP

Usage of yoA:

(F1) To manifest the speaker’s desire for the hearer to accept the proposition
(F2) To update the hearer’s public belief
(C1) The speaker assumes that there is conflict or incompatibility in his/her understanding of the proposition and other belief salient to him/her

While it is pointed out in McCready & Davis (in press) that the use of yo makes the speaker’s desire for the hearer to accept the proposition to be ‘fully explicit’, Davis (2009) also suggests that yo is used in an utterance to update the hearer’s public belief. What he proposes is that the use of yo with a falling intonation indicates that there is some kind of incompatibility in the speaker’s and the hearer’s understanding of the proposition, requiring a downdate of the hearer’s public belief before the said update. However, the incompatibility is not limited to be between the speaker and the hearer; rather, it can be what is made known to the speaker, for example from a person other than the speaker and the hearer, or an article on the newspaper.

Usage of yoB:

(F1) To manifest the speaker’s desire for the hearer to accept the proposition
(F2) To update the hearer’s public belief
(F3) The speaker intends to guide the hearer in decision making by providing relevant information
(C1) The speaker assumes the hearer does not have knowledge of the proposition

(F1) and (F2) of yoB is the same as yoA. The additional function (F3) is the function of yo with a rising intonation: via giving information to the hearer, the speaker intends to guide the hearer in decision making (Davis, 2009). By the act of providing information under such circumstance, the speaker assumes the hearer does not have the necessary information in the proposition to solve a problem or a dilemma he/she is currently facing.

Usage of neA:

(F1) To seek agreement from or confirm information with the hearer
(C1) The speaker assumes the hearer has the same or more concrete knowledge of the proposition

The function (F1) of neA is generally agreed by most linguists. Ne-suffixed utterances are used to seek hearer’s agreement on the proposition made by the speaker, or to confirm the proposition with the hearer. It is therefore necessary for the speaker to assume the hearer has the same or more concrete knowledge
of the proposition as he/she does, or else he/she cannot expect to receive agreement or confirmation from the hearer.

**Usage of neB:**

(F1) To provide information to the hearer  
(C1) The speaker assumes the hearer does not know the proposition  
(C2) The speaker has not fully accepted the proposition

This is another usage of ne as mentioned in McCready & Davis (in press) and Katagiri (2007). Ne is not only used to seek confirmation, but also to provide information that is unknown to the hearer.

(40) kaigi wa 6-gou-shitsu desu ne.  
meeting TM room.6 is SFP  
(I think) The meeting will be held in Room 6.

When being asked where the meeting will be held, the speaker of (40) uses neB to provide the information to the hearer. From the act of asking about the meeting location, the speaker assumes that the hearer does not know the meeting will be held in Room 6, i.e. the proposition. The usage of neB may seem similar to yoB, but the difference is that neB indicates that the speaker has not fully accepted the proposition yet, likely because the knowledge of it was from an outside source that the speaker is uncertain about (Katagiri, 2007). In the scenario of (40), the speaker may have read about the location on a meeting notice, yet he is not absolutely certain if the information is correct. The use of neB shows that he is not fully committed to the truth of the proposition at this point.

**4.1.2. Individual SFP in combinations**

**Combination yoA and neA:**

(A colleague said the meeting is at 1, so the speaker turns to the hearer, who he believes to think it starts at 3 as he does, for confirmation)

(41) mitingu wa sanji kara desu yone  
meeting TM 3:00 from is SFP  
The meeting is at 3, isn’t it?  
(McCready & Davis in-press:15, modified)

The combination of yoA and neA is valid when the speaker intends to confirm the proposition with the hearer, when there is a belief that is incompatible with the speaker’s. In (41), the speaker uses yoA to show that he desires the hearer to accept the proposition of the meeting starts at 3, and to update the hearer’s belief in the starting time. Using yoA, the speaker believes that his understanding of the proposition is different from what is told by the third person, i.e. the meeting starts at 3 and at 1. He assumes that the hearer believes the same as he does, so he turns to the hearer to seek confirmation.

This leads us to the function of neA. Due to the incompatibility of understanding and his assumption of the hearer’s belief, the speaker uses neA in his utterance to confirm the proposition with the hearer. This is based on the assumption that the hearer has the same knowledge of the proposition as he does, which is the meeting is at 3.

When using yoA and neA together, the speaker assumes there is a different understanding of the proposition being presented to him, which justifies the use of yoA. The conflicting understanding does not necessarily come from the hearer, but other sources; meanwhile, the speaker assumes the hearer has
the same understanding as him, which satisfies the use condition of \( ne_A \) for seeking confirmation from the hearer. Therefore, this is a valid combination of the usage of \( yone \).

**Combination \( yo_B \) and \( ne_A \):**

There is conflict between the use conditions of \( yo_B \) and \( ne_A \). When using \( yo_B \), the speaker assumes the hearer does not have knowledge of the proposition, and intends to provide the propositional content to help the hearer to make decisions. On the contrary, the use of \( ne_A \) is based on the speaker’s assumption that the hearer has the same or more concrete knowledge of the proposition than the speaker himself/herself. Due to this fundamental incompatibility in conditions, \( yo_B \) and \( ne_A \) cannot be used together, hence an invalid combination.

**Combination \( yo_A \) and \( ne_B \):**

(The speaker stayed at home the day before, while the hearer went hiking, and told the speaker that the weather was nice)

(42) kinou, ame ga futteita yone
    yesterday rain NM was.falling SFP
    It was raining yesterday, wasn’t it?

The speaker and hearer in (42) have different believes of the weather of the day before. The speaker stayed indoors and thinks it was raining, yet the hearer who went hiking tells a different story of experiencing nice weather. Because of the difference, the speaker uses \( yo_A \) to manifest that he desires the hearer to accept his proposition, and to agree with him that it was raining the day before. He also intends to update the hearer’s belief by telling the hearer that it was raining, as the hearer believes the opposite. Although the speaker believes it was raining the day before, the hearer told him that the weather was nice. Therefore, the speaker assumes both parties have incompatible understandings of the proposition, and such assumption is manifested in the use of \( yo_A \).

The speaker intends to provide information on yesterday’s weather to the hearer, since the hearer apparently does not know that it was raining, thus so assumes the speaker. These can be reflected on the use of \( ne_B \). However, as the speaker stayed indoors yesterday, it is possible that his belief may be wrong, so he is not fully committed to the truth of the proposition. This satisfied another use condition of \( ne_B \).

To to use \( yo_A \) and \( ne_B \) together, the speaker has to assume that there is a belief incompatible to his understanding to the proposition, and that the hearer does not know the proposition. The former is derived from what was told by the hearer in the previous conversation, ‘the weather was nice yesterday’, which contradicts the speaker’s belief. The speaker is also aware that the hearer does not know about the proposition ‘it was raining yesterday’, or else he would not have had an opposite belief. Based on these assumptions of the speaker, \( yo_A \) and \( ne_B \) have compatible use conditions, thus the validity of the combination.
Combination yo\textsubscript{B} and ne\textsubscript{B}:

(When giving directions to taxi driver)

\begin{verbatim}
(43) asoko-ni yuubin-posuto ga miemasu yone. sono-sugusakino kado wo
      at.over.there mailbox NM can.see SFP immediately.that corner ACC
      migi-ni magatte kudasai
to.right turn please
You can see the mailbox over there, right? Please turn right at that corner.
\end{verbatim}

(Izuhara 2003:4)

When the speaker in (43) is giving directions to the taxi driver riding in the same vehicle, the speaker uses yo\textsubscript{B} to show his intention to urge the hearer to accept the proposition, namely the visibility of the mailbox at the corner, which is the information that helps the hearer to reach the destination. The speaker also intends to use yo\textsubscript{B} to update the hearer’s belief by showing him a mailbox on the route, as the hearer is not familiar with the route and does not already know about the mailbox at the corner where he should take the turn. Also, due to the lack of necessary information, the hearer was not able to reach the destination by taking the right route. The speaker thus intends to provide the directions, so that the hearer can have sufficient information which helps him decide which route to take. Besides all these functions, the act of pointing out the mailbox on the route manifests that the speaker assumes the hearer does not have knowledge of the proposition before it is uttered, and this satisfies the condition of using yo\textsubscript{B}.

With the use of ne\textsubscript{B}, the speaker intends to provide information on the route to the hearer. This is based on his assumption that the hearer does not know the way, thus does not know that there will be a mailbox in view on the way. However, as the visibility of the mailbox also relies on the hearer, the speaker has not yet fully accepted the proposition of the hearer being able to see the mailbox over there, before the hearer can confirm so. As another use condition, the reservation on the truth of the proposition justifies the use of ne\textsubscript{B} in the utterance. Since all conditions are met, yo\textsubscript{B} and ne\textsubscript{B} is a valid combination of the usage of yone.

4.1.3. Conclusion on combination yone

From the analysis and examples above, the possible usages of yone can be those of the combinations yo\textsubscript{A} and ne\textsubscript{A}, yo\textsubscript{A} and ne\textsubscript{B}, and yo\textsubscript{B} and ne\textsubscript{B}. The functions and use conditions, including the speaker’s intentions and his/her assumptions of the hearer’s knowledge, of using the component particles in combinations are compatible and do not cause conflicts when being used together. It can thus be concluded that yone at least inherits the usages of these combinations of yo and ne usages, though the SFP combination may contain more usages beyond its components.

As for yo\textsubscript{B} and ne\textsubscript{A}, they cannot be combined due to contradiction in their conditions. Since the speaker cannot make assumptions of the hearer for not having knowledge of the proposition, while having the same or even more concrete knowledge of the proposition than the speaker, such combination is regarded as invalid. This means that the combination of their usages cannot be applied to yone.
4.2. Cantonese SFP: gaa3, wo3 and gaa3-wo3

4.2.1. Usages of individual SFP

Usage of gaa3A:

(F1) To make the utterance relevant to the current context
(F2) To give ‘smooth-alert’
(C1) The speaker assumes the proposition is true
(C2) The speaker assumes the hearer has knowledge of a proposition, which should have been known and is a given (as opposed to a new) situation, but may have been overlooked or neglected by the hearer

According to Sybesma & Li (2007), gaa3 is used to make the utterance more relevant to the current context. Also, as a softened ge3, gaa3 has a weaker force of assertion, accompanied by a hint of ‘reminding’, to give ‘smooth-alert’ to the hearer. The use of gaa3 is based on the speaker’s assumption that he/she believes the proposition to be true (Kwok, 1984), and is often used to assert fact or proposition without doubt to the speaker (Matthews & Yip, 1994; Fung, 2000). The speaker assumes the hearer has knowledge of a proposition, as supposedly it is not a new one, yet the hearer may happen to overlook or neglect it, about which the speaker intends to remind him/her (Fung, 2000).

Usage of gaa3B:

(F1) To make the utterance relevant to the current context
(F2) To give ‘smooth-alert’
(C1) The speaker assumes the proposition is true
(C2) The speaker assumes the hearer has no knowledge of the proposition

The usages (F1), (F2) and (C1) of gaa3B are the same as gaa3A. The only difference between the two is the speaker’s assumption of the hearer’s knowledge. When using gaa3A, the speaker assumes the hearer has knowledge of the situation (although it might have been overlooked), yet he/she assumes the hearer has no knowledge of the proposition at all when using gaa3B.

(The hearer is wondering how a friend can find his way around when travelling to Berlin)

(44) keoi5 sik1 dak1- man2 gaa3
he/she know German SFP
Don’t worry, he knows German.

(Sybesma 2004:177, modified)

In (44), the speaker assumes the hearer did not know that their friend knows German, or else he/she would not have had such concern about how the friend is going to find the way around when travelling to a strange place. Gaa3B is used in this case to provide the information to the hearer, who did not have such knowledge before.
Usage of \textit{wo3}_A:

\begin{itemize}
  \item[(F1)] To provide noteworthy information
  \item[(F2)] To remind the hearer to take something into special consideration
  \item[(C1)] The speaker assumes the hearer has knowledge of the proposition
\end{itemize}

Usage of \textit{wo3}_B:

\begin{itemize}
  \item[(F1)] To provide noteworthy information
  \item[(F2)] To inform the hearer about something that should be taken into special consideration
  \item[(C1)] The speaker assumes the hearer does not have knowledge of the proposition
\end{itemize}

Luke (1990) points out that one of the main usages of \textit{wo3} is to provide noteworthy information to the hearer. This is regarded as one of the functions of \textit{wo3}_A and \textit{wo3}_B. The two particles only differ in the speaker’s assumption of the hearer’s knowledge. When \textit{wo3}_A is used, the speaker assumes the hearer has knowledge of the proposition, and he/she simply reminds or helps the hearer remember about such knowledge. The opposite is assumed when \textit{wo3}_B is used, where the speaker intends to utter proposition unknown to the hearer. Although Luke suggests it is not important to distinguish between ‘reminding’ and ‘informing’ when analysing conversations, it will be one of the key properties that helps identify which usages of \textit{wo3} are applicable to the SFP combination.

Usage of \textit{wo3}_C:

\begin{itemize}
  \item[(F1)] To point out noteworthy event or state-of-affairs presented in the previous conversation
  \item[(C1)] The speaker assumes the hearer has more concrete knowledge of the proposition
\end{itemize}

Another usage of \textit{wo3} is to point out what the speaker finds noteworthy in the previous part of the conversation (Luke, 1990).

\begin{quote}
(45) \text{waa1 hoi2-sin1 wo3, gam3 gwai3 wo3 di1-je5}\\
\text{wow seafood SFP so expensive SFP the.things}\\
\text{Wow, seafood, that must be expensive.}
\end{quote}

(Luke 1990:246)

The hearer in example (45) told the speaker about the food she had the day before. In the hearer’s report, the speaker noticed about the food and the possible price the hearer had to pay for it. To the speaker, it is expensive to order seafood in a restaurant, so she uses \textit{wo3}_C in the first half of the utterance to point out the noteworthiness of the food. Also, as the hearer was the one who had the food, the speaker assumes she has more concrete knowledge of the proposition, hence the use of \textit{wo3}_C to ask for confirmation of the noteworthy event from the hearer.

Usage of \textit{wo3}_D:

\begin{itemize}
  \item[(F1)] To report unexpected circumstances in story-tellings
  \item[(C1)] The speaker assumes the hearer has no knowledge of the proposition
  \item[(C2)] The speaker assumes the hearer believes the opposite, which is a rule or a norm that is generally valid
\end{itemize}
In reportings and story-tellings, the speaker can use wo3D to indicate what is unexpected in the experience (Luke, 1990). In example (37), the speaker believes a person does not get sick after swimming in a pond, yet it happened and is out of the speaker’s expectation. When reporting or telling a story, the speaker believes that the hearer has not heard about it before and has no knowledge of it. What is unexpected to the speaker also implies that he/she assumes the hearer should believe what is considered ‘normal’ would have happened, given that it is a rule or a norm for the ‘normal’ to take place, yet it turned out to be what ought not to happen.

**Usage of wo3E:**

(F1) To give ‘dispreferred turn’ which challenges the validity of the hearer’s belief

(C1) The speaker assumes the hearer believes the opposite, which is a rule or a norm that is generally valid

(C2) The speaker assumes the hearer was expecting confirmation on or agreement to what is presented in the previous conversation

Wo3 is also used to give ‘dispreferred turn’ to the hearer. Luke (1990) suggests that dispreferred turn includes the usages in challenging a position, reply to contact-establishment and disconfirmation. In all these scenarios, the speaker assumes, as in wo3D, that the hearer has certain belief of what ought to happen under normal circumstances, and that the hearer was expecting confirmation on or agreement to his/her belief of what is presented in the previous conversation. By using wo3D, the speaker gives dispreferred turn that challenges the hearer’s belief. For instance, the speaker in example (38) gives evidence on his son’s behaviour, which does not complied with what the hearer believes to be true about a teenager.

### 4.2.2. Individual SFP in combinations

**Combination gaa3A and wo3A:**

(The hearer decides to go visit a friend living in the US in January, and this is not his first time visiting the country)

(46) nei5 jat1-jyut6 heoi3 dung1-ngon6, hou2 dung3 gaa3-wo3 you first.month go east.coast very cold SFP

If you’re going to the East Coast in January, it’s going to be very cold!

(Matthews & Yip 1994:344, modified)

The speaker in (46) uses gaa3A to make the utterance more relevant to the context by pointing out what the hearer should concern about his decision to go to the East Coast in January, as well as to give the hearer a ‘smooth-alert’ about what he should be expecting. The use of gaa3A is based on the assumption that the speaker deems what he said is true, that it will be very cold in the East Coast in January.

Meanwhile, the speaker assumes the hearer knows about the weather in the East Coast in January, since it is not the first time he visits the US. However, he still decides to go there despite the cold weather, which makes the speaker consider that he may have overlooked the fact that it will be cold then. This, thus, explains the use of wo3A in (46). Although the speaker assumes the proposition may have been temporarily overlooked by the hearer, he still considers the hearer to have such knowledge. The conditions of using gaa3A and wo3A can be satisfied at the same time, making it a valid combination.
Combination gaa3B and wo3A:

Gaa3B and wo3A is an invalid combination due to the incompatible conditions of using the two particles together. To use gaa3B in an utterance, it requires the speaker’s assumption of the hearer having no knowledge of the proposition, yet the use of wo3A, on the other hand, requires the speaker to assume the hearer to have knowledge of it. Given that it is not possible to assume the hearer not having such knowledge while having the knowledge at the same time, these two conditions contradict each other, hence the invalidity of the combination gaa3B and wo3A.

Combination gaa3A and wo3B:

Similar to the combination gaa3B and wo3A, gaa3A and wo3B is an invalid combination because of the contradicting speaker’s assumptions on the hearer’s knowledge. One of the conditions of using gaa3A is that the speaker assumes the hearer has knowledge of the proposition, even though it might have been overlooked. However, the condition of using wo3B is that the speaker has to assume the hearer does not have knowledge of the proposition. Since it is impossible for the speaker to make such contradicting assumptions about the hearer’s knowledge, the two particles are incompatible with each other, making the combination an invalid one.

Combination gaa3B and wo3B:

(On an information leaflet about occupational safety and health)

(47) lou4-gung1-cyu5 dou1 jau5 tai4-gung1 zik1-jip6 gin6-hong1 gong2-zo6 labour.department also have provide occupation health seminar bei2 gung1-zung3, cyun4-bou6-dou1 hai6 min5-fai3 gaa3-wo3 to public all be free.charge SFP

The Labour Department also provides seminars on occupational health to the public, and these are all free of charge!

Extracted from an information leaflet to promote occupational safety and health, the use of gaa3B in (47) makes the utterance more relevant to the context by providing information about free seminars on occupational health. It also gives ‘smooth-alert’ to the hearer, or the reader in this case, about these seminars that very likely the hearer wants to know about. In order to provide this information, it is necessary for the speaker to assume the proposition to be true, which means he/she truly believes that the department does provide seminars to the public, and these seminars are free of charge. With gaa3B, the speaker also assumes the hearer has no knowledge about the seminars, and intends to provide this new information in the proposition to the hearer.

This is also a function shared by wo3B. By mentioning the seminars, the speaker provides this noteworthy information to the hearer, as they concern about occupational health, and the related information will be provided on the seminars. In addition, the use of wo3B allows the speaker to inform the hearer about these free seminars, so that the hearer can take this into consideration if they concern about occupational health. The act of providing new information to the hearer is based on the speaker’s assumption that the hearer does not have knowledge about it, thus satisfies the condition of using wo3B.
Combination *gaa3A* and *wo3C*:

(Speaker B was talking about having his first puff of heroin in the prison)

(48) A: zik1-hai6 hai2 gaam1-juk6 jap6-bin6 sik6 gaa3-wo3

that.means at prison inside smoke SFP

So you smoked it inside the prison (which is an unusual situation).

B: Yeah.

A: So there was a supply of those drugs.

(Luke 1990:244, modified)

Speaker A in (48) uses *gaa3A* to make the utterance more relevant to the context, where speaker B was talking about his experience of having heroin in the prison. *Gaa3A* is also used to give ‘smooth-alert’ to the hearer. The availability of drugs inside prison is not common, and the speaker intends to draw the hearer’s attention on this unusual situation. This is based on speaker A’s assumption that ‘smoking heroin in prison is unusual’, which satisfies the condition of using *gaa3A* in the utterance. Speaker A also assumes speaker B knows that it is an unusual incident. However, as it is reported plainly by speaker B without emphasising or elaborating the abnormal situation, speaker A assumes the proposition, ‘it is unusual to smoke heroin inside the prison’, may have been overlooked by speaker B.

The use of *wo3C* points out such unusualness. In the previous part of the conversation, speaker B mentioned having his first puff of heroin in the prison, yet the event was brought up as a ‘normal’ circumstance without emphasis or elaboration. Speaker A thus points out this event with *wo3C*, so as to raise awareness of the unusualness of heroin being available in prison. As it is a story told by speaker B about his own experience, speaker A assumes speaker B has more concrete knowledge about the proposition. The condition of using *wo3C* is thus satisfied.

Combination *gaa3B* and *wo3C*:

*Gaa3B* and *wo3C* is not a valid combination, due to the incompatible use conditions of the two particles. To use *gaa3B* in an utterance, the speaker has to assume the hearer has no knowledge of the proposition. However, if *wo3C* is used, it is necessary for the speaker to assume the hearer has knowledge of the proposition even more concrete than the speaker does. As the speaker cannot assume the hearer has no knowledge of the proposition, while having more concrete knowledge, there is conflict between the conditions of using *gaa3B* and *wo3C* together. Therefore, the combination of *gaa3B* and *wo3C* is invalid.

Combination *gaa3A* and *wo3D*:

*Gaa3A* and *wo3D* is an invalid combination. The use of *gaa3A* requires the speaker to assume the hearer knows the proposition, although it might have been overlooked. On the other hand, it is necessary for the speaker to assume the hearer does not know the proposition in order to use *wo3D* in story-tellings. Given that it is impossible for the speaker to assume the hearer has knowledge of the proposition, and have no knowledge of it at all, the conditions of using *gaa3A* and *wo3D* as a combination contradict each other, which explains the invalidity of the combination.
Combination gaa3b and wo3p:

(The speaker is telling a mysterious incident he encountered on a pool table)

(49) hau6-min6 ming4-ming4 mou4-jan4, daan6 zi1 gwan3 jau6-wui6 back obviously no.one but CL cue but
dat6-jin4-gaan1 hoeng3-cin4 zong6-jat1-zong6 go3 bo1 gaa3-wo3 suddenly forward hit CL ball SFP
There was really no one at the back, but the cue suddenly hit the ball.

One of the functions of gaa3b in (49) is to make the utterance more relevant to the context. The speaker is talking about a mysterious incident he encountered, and the unexplainable event of the cue hitting the ball by itself is highlighted here, indicating that this is the event that ‘bothers’ the speaker. Gaa3b is also used to highlight this event, as supposedly, a cue does not hit a ball on the table itself if no one is holding it. However, it did happen, and the speaker uses gaa3b to alert the hearer to this mysterious happening.

The use of gaa3b is based on two conditions. Firstly, the speaker assumes what he said is true, for that he is talking about what he witnessed with his own eyes, so there is no way he will assume the proposition to be not true. Secondly, he assumes the hearer does not know the proposition to be true, or else he would not have to tell the hearer a story that was already known.

The use of wo3p in this utterance is to report an unexpected circumstance. Normally, a cue can only hit a ball if someone is holding it, yet such ‘normal circumstances’ do not apply to what the speaker witnessed – the ball on the table was hit by a cue held by no one, and this is out of the speaker’s expectation. The use of wo3p also satisfies two conditions. The first condition is that the speaker assumes the hearer does not know the proposition. This is easily satisfied in story-tellings, since when the speaker tells a story of his own experience, he expects the hearer does not already know about it, as in (49). The second condition is that the speaker assumes the hearer believes what should be a norm is generally valid, yet the speaker tells the opposite. A cue must be held by someone so that it can hit a ball on a pool table. This is a general rule applicable to most situations with physically-existing, tangible things. It is thus normal for the hearer to believe that a cue cannot hit a ball without anyone holding it, until the unexplainable event happened. Therefore, there is no contradiction between the usages of gaa3b and wo3p, making them a valid combination.

Combination gaa3c and wo3e:

(The hearer, who speaks Cantonese, tells the speaker that Cantonese speaker should be able to understand Mandarin to some extent)

(50) daan6-hai6 jyu4-gwo2 nei5 zan1-hai6 jyun4-cyun4 mei6-hok6-gwo3 gwok3-jyu5 but if you really completely not.learned Mandarin
le1, dou1 gei2-naan4-haa5 gaa3-wo3 SFP also quite.difficult SFP
But if you really haven’t learned Mandarin at all before, it’s quite difficult too, you know.

The use of gaa3c in (50) is to make the utterance more relevant to the context. In the previous conversation, the speaker and hearer were discussing how Cantonese speaker can understand Mandarin. The speaker mentions a special situation, that it can be quite difficult for some Cantonese speakers to understand Mandarin, which the hearer may have overlooked. The gaa3c is used to make the proposition about this special situation more relevant to what is discussed.
Another function of gaa3Λ is to give ‘smooth-alert’ to the hearer. As the hearer is certain that Cantonese speaker is able to understand Mandarin, the speaker considers that the hearer is not aware of or overlooks the fact that not all Cantonese speakers are able to do that easily. By stating the special situation of not having learned Mandarin, the speaker intends to draw the hearer’s attention to it and convince her to take it into account.

Using gaa3Λ in (50) is based on two conditions. One of them is that the speaker assumes the proposition to be true. This is satisfied as the speaker does not absolutely agree with the hearer’s belief, and she does believe that it can be difficult for a Cantonese speaker to understand Mandarin if the speaker has not learned it ever. Another condition is that the speaker assumes the hearer may have overlooked the proposition of a special situation of what the hearer believes to be true does not apply. Being a Cantonese speaker, the hearer should know that it may not be easy for a fellow Cantonese speaker to understand Mandarin if he/she has not learned it before, yet from what the hearer said in the previous conversation, the speaker believes the hearer may have overlooked the proposition, and thought that all Cantonese speakers could understand Mandarin. This condition of using gaa3Λ is thus satisfied.

Using wo3E in (50) gives ‘dispreferred turn’ to the what the hearer believes. She believes that Cantonese speakers certainly can understand Mandarin to some extent, yet what the speaker mentions challenges such belief. The use of this particle is based on the condition that the speaker assumes the hearer believes in the ‘norm’. Since Cantonese and Mandarin are both varieties under the Chinese language, it is considered normal for Cantonese speakers to understand certain level of Mandarin. This is valid in normal situations and was said explicitly by the hearer in the previous conversation, so the speaker assumes this is what the hearer believes. Also, from the hearer’s certainty, the speaker assumes that she intends to convince the speaker to believe the same, and expects agreement from the speaker. This condition of using wo3E is satisfied as well, making gaa3Λ and wo3E a valid combination of gaa3-wo3 usages.

**Combination gaa3Λ and wo3E:**

(The counsellor told the speaker she was sure that it is normal for her son, a teenage boy, to be energetic)

(51)  keoi5 jau6-m4-hai6 hou2-wut6-joei6 wo3, Ngo5-dei6 daai3 keoi5 he really.not.be very.energetic SFP we bring he ceoi1-heoi3 waa2n le1, keoi5 jau6 sei2-se4-laan6-si6 gam2 m4-jyun6 out play SFP he then dead.snake.rotten.eel like not.willing juk1 gaa3-wo3 move SFP

Well, but in fact, he isn’t really very energetic. When we take him out to play, he’s like a dead snake and wouldn’t move.

(Luke 1990:217, modified)

In example (51), gaa3Λ makes the utterance more relevant to the context. In the conversation, the two parties are discussing the behaviour of a teenage boy, the son of the speaker. The counsellor told the speaker that it is normal for her son to be energetic, yet the speaker has an opposite view with evidence. Such ‘evidence’ is uttered with gaa3Λ to make it more relevant to what is discussed. Another function of gaa3Λ is to give ‘smooth-alert’ to the hearer and draw the hearer’s attention to what the speaker considers as not compatible to what the hearer believes. The speaker mentions how her son is unwilling to move when he is taken out to play, a situation that is not compatible to the hearer’s belief of ‘all teenage boys are energetic’.

The use of gaa3Λ is based on the speaker’s assumption that what she said is true. Since she witnessed her son’s behaviour, there is no doubt that she believes in her first-hand experience. Another assumption
is that the hearer does not know about the behaviour of the son – as the counsellor was trying to convince the speaker that teenage boys are energetic, the speaker assumes the hearer was not aware about the abnormal behaviour of her son, and very likely, the counsellor did not know how her son behaves when the parents are taking him out to play. Therefore, both conditions of using gaa3b are satisfied.

The use of wo3E in the example is to give ‘dispreferred turn’ to the hearer’s belief. In the previous conversation, the hearer was certain and intended to convince the speaker that all teenage boys are energetic, so does her son. However, such belief is challenged by the speaker, with evidence of the son being unwilling to move when he has chance to play. The particle is used based on two conditions related to the speaker’s assumptions. Firstly, the speaker assumes the hearer believes what is regarded as the norm, yet the opposite to the proposition. Normal teenage boys should be energetic and outgoing, and do not miss any chance where they are allowed to play. This is usually valid and applicable to most boys, and the hearer believes so, or else she would not have intended to convince the speaker to believe the same. Secondly, the speaker assumes the hearer was expecting agreement on this norm. Given that the hearer was certain about this norm and intended to convince the speaker to believe so, the speaker assumes the hearer was expecting her agreement to the belief, that all boys are energetic. As the conditions of using the two particles are compatible, the combination of gaa3b and wo3E is a valid one.

4.2.3. Conclusion on combination gaa3-wo3

From the above analysis, the possible usage of gaa3-wo3 are those of the following six combinations: gaa₃ₐ and wo₃ₐ, gaa₃ₐ and wo₃ₐ, gaa₃₂ and wo₃ₐ, gaa₃₂ and wo₃ₐ, gaa₃ₐ and wo₃ₑ, and gaa₃₂ and wo₃ₑ. Similar to yone, the validity of the combination greatly depends on the compatibility of the speaker’s assumptions when the individual particles are used together. If there is any contradiction in these conditions, the combination cannot be a valid option for explaining the usages of the SFP combination. It can also be concluded that the gaa₃-wo₃ inherits the usages of gaa₃ and wo₃ of the valid combinations. However, as mentioned in the previous chapters, there are still more usages which are not included in the combinations, and these usages will be discussed in the next chapter.

5. Additional usages of SFP combinations

In the previous chapter, we can see that while some of the usages of the SFP combinations inherit their functions and use conditions from the individual particles, the combinations still possess some usages exclusively to themselves, as briefly discussed in examples (6) and (9).

I propose that the additional usage of yone and gaa3-wo3 is the following.

(F1) To express the speaker’s uncertainty of the hearer’s knowledge of the proposition

(C1) The speaker assumes the hearer has knowledge of the proposition, but the speaker is not fully committed to this assumption

In the following, I will revisit some utterance examples in the previous sections to analyse the proposed additional usage of both SFP combinations.
5.1. *Japanese SFP yone*

(The speaker stayed at home yesterday, while the hearer went hiking, and told the speaker that
the weather was nice)

(52) *kinou, ame ga futteita yone*
yesterday rain NM was.falling SFP

It was raining yesterday, wasn’t it?

(= (42))

The speaker and hearer of (52) has incompatible understandings of the proposition ‘it was raining
yesterday’. The hearer went outdoors the day before, thus the speaker thought that he should know
about the weather and had the same belief as the speaker does. However, out of the speaker’s
expectation, the hearer disagreed with him. The speaker is then uncertain about the hearer’s knowledge
of the proposition, and uses *yone* to express such uncertainty.

As the hearer was outdoor the day before, the speaker assumes that he has knowledge of the proposition.
But from the previous conversation, it appears to the speaker that it is not the case – the hearer does not
know that it was raining the day before. From the hearer’s words, the speaker is not certain if his
assumption of the hearer’s knowledge of the proposition is absolutely true, and he is not fully committed
to it.

(When giving directions to taxi driver)

(53) *asoko-ni yuubin-posuto ga miemasu yone. sono-sugusakino kado wo*
at.over.there mailbox NM can.see SFP immediately.that corner ACC
*migi-ni magatte kudasai*
to.right turn please

You can see the mailbox over there, right? Please turn right at that corner.

(= (43))

When sitting in the taxi, facing the same direction, it is natural for the speaker of (53) to think that the
hearer can, as he does, see the mailbox at the corner in front of the vehicle. However, the speaker cannot
know if the hearer is able to see it. After all, only the hearer knows what is visible in his own sight. The
speaker uses *yone* to express the uncertainty about the hearer’s knowledge of the proposition, which is
‘the hearer can see the mailbox over there’.

Since the two parties are facing the same direction, and the mailbox is visible to the speaker, the speaker
assumes the hearer should be able to see that mailbox. Yet, only the hearer knows whether he is able to
see the mailbox, so the speaker still has doubt about this assumption and is not fully committed to it.

This additional usage belongs solely to the SFP combination *yone*, and is not derived from the mere
usage combination of individual *yo* and *ne*.

(54a) *kinou, ame ga futteita yo*
yesterday rain NM was.falling SFP

It was raining yesterday, you know.

(54b) *kinou, ame ga futteita ne*
yesterday rain NM was.falling SFP

It was raining yesterday, right?

If *yone* in (52) is replaced with individual *yo* and *ne*, neither of the new utterances directly tells that the
speaker is uncertain about the hearer’s knowledge of the proposition. The use of *yo* in (54a) simply
intends to update the hearer’s knowledge. Whether it is *yo_A* or *yo_B*, the utterance does not show that the
speaker is not clear about the hearer’s knowledge of the proposition. The use of *yo_B* even requires the
speaker to be certain that the hearer does not know about the proposition. The use condition of the
additional usage, that the speaker assumes the hearer has knowledge of the proposition, is not required by any of the individual yo usages either.

In (54b), whether ne has the usage of neA or neB, it does not reflect the speaker’s doubt about the hearer’s knowledge of the proposition. In addition, both of the usages require the speaker to have clear assumption of such knowledge, either same or more concrete knowledge, or none at all. Although neA can be used when the speaker assumes the hearer has knowledge of the proposition, which is partly in alignment with the use condition of the yone additional usage, the function, to express the speaker’s uncertainty of the hearer’s knowledge, apparently has no relation to the two yo usages.

Examples (55a) and (55b) shows that the function of expressing the speaker’s uncertainty about the hearer’s knowledge of the proposition is not applicable to individual yo or ne. The function of (55a) is to provide information to the hearer, while addressing the hearer’s knowledge is not the main concern here. The use condition of yoa does not require speaker’s assumption of the hearer’s knowledge, and that of yob even requires the speaker to assume the hearer does not know the proposition at all. Thus, the additional usage is not applicable to individual yo.

The use of ne in (55b) is not directly related to the additional usage of yone either. Both neA and neB have functions different from expressing uncertainty of the hearer’s knowledge of the proposition. As for their use conditions, neB requires the speaker’s assumption of the hearer having no knowledge of the proposition, which is the opposite to the additional usage; using neA requires the speaker to assume that the hearer has certain level of knowledge, which may be said that it contributes to the usage of yone. However, the remaining function are not complemented by any usages of yo. Therefore, it can be concluded that this is an exclusive usage which belongs to the combination yone, and does not simply inherit from the components yo and ne.

5.2. Cantonese SFP gaa3-wo3

(The hearer decides to go visit a friend living in the US in January, and this is not his first time visiting the country)

(56) nei5 jat1-jyut6 heoi3 dung1-ngon6, hou2 dung3 gaa3-wo3
you first.month go east.coast very cold SFP
If you’re going to the East Coast in January, it’s going to be very cold!

(=46)

Learning that the hearer plans to go to the East Coast in January, the speaker of (56) intends to ask the hearer to think twice, as the speaker knows that the weather then will be cold and it may not be the best time to visit there. Since it is not the first time the hearer visits the country, the speaker considers that he should have known about the weather in January. However, from the hearer’s plan, it seems the hearer does not know about that. The speaker thus uses gaa3-wo3 to express his uncertainty of the hearer’s knowledge of the proposition, ‘it will be cold in the East Coast in January’.

The use of the combination is based on the speaker’s assumption on the hearer’s knowledge. As elaborated, the speaker thought the hearer knew about the weather in January, given that the hearer has been to the country and has certain knowledge about it. However, the hearer’s plan appears to tell the
opposite. This is why the speaker assumes the hearer has knowledge of the proposition, yet he is not fully committed to such assumption due to the hearer’s decision of visiting the East Coast despite the cold weather.

(The hearer, who speaks Cantonese, tells the speaker that Cantonese speaker should be able to understand Mandarin to some extent)

(57) daan6-hai6 jyu4-gwo2 nei5 zan1-hai6 jyun4-cyun4 mei6-hok6-gwo3 gwok3-jyu5 but if you really completely not.learned Mandarin le1. dou1 gei2-naan4-haa5 gaa3-wo3 SFP also quite.difficult SFP But if you really haven’t learned Mandarin at all before, it’s quite difficult too. (=50))

When the hearer told the speaker that Cantonese speaker can understand Mandarin to some extent, the speaker uses gaa3-wo3 to express her uncertainty about whether the hearer knows the proposition. The speaker deems that Cantonese speaker may not understand Mandarin easily if he/she has not learned it before. Also a Cantonese speaker, the hearer should know about it in the speaker’s view. From the hearer’s opinion, however, it seems she does not know the proposition. The speaker is thus uncertain about the hearer’s knowledge of it, and uses gaa3-wo3 to show her doubt.

Being a Cantonese speaker, the speaker assumes the hearer knows that it can be quite difficult for Cantonese speaker to understand Mandarin, as the speaker herself does. The hearer’s opinion yet shows that she has not considered this, which weakens the speaker’s assumption. Being unsure about the hearer’s knowledge, the speaker is not fully committed to her assumption that the hearer has knowledge of the proposition.

This additional usage of gaa3-wo3 is one that only applicable to the SFP itself, rather than a combination of the usages of the components gaa3 and wo3.

(58a) nei5 jat1-jyut6 heoi3 dung1-ngon6, hou2 dung3 gaa3 you first.month go east.coast very cold SFP If you’re going to the East Coast in January, it’s going to be very cold!

(58b) nei5 jat1-jyut6 heoi3 dung1-ngon6, hou2 dung3 wo3 you first.month go east.coast very cold SFP If you’re going to the East Coast in January, it’s going to be very cold. Isn’t it?

The use of gaa3 in (58a) is to, mainly, make the utterance more relevant to the context and let the hearer be aware of the propositional content. The individual particle has no function directly related to the additional usage of gaa3-wo3. As for the use condition of the additional usage, although gaa3 has a similar condition, which is the speaker’s assumption of the hearer’s knowledge of the proposition that has been possibly overlooked, the function of expressing the speaker’s uncertainty is not complemented by any usages of wo3. In other words, the additional usage may inherit some properties of gaa3, but wo3 does not contribute to it, making it an independent usage of the SFP combination.

Example (58b) suffixed with wo3 does not express directly the speaker’s uncertainty of the hearer’s knowledge either. It is used to remind the hearer to consider certain situation, regardless whether the hearer knows the proposition already. Some usages of wo3 contain conditions where the speaker assumes the hearer to have knowledge of the proposition, which is somehow aligned with the additional usage. However, yo plays no role in fulfilling the remaining properties of such usage.
By using gaa3 in (59a), the speaker intends to suggest a situation the hearer may not know. The use of gaa3 here does not address the speaker’s doubt on the hearer’s knowledge of the proposition directly. The use condition of gaa3 somehow resembles that of the additional usage of gaa3-wo3 by requiring the speaker to assume the hearer has knowledge of the proposition overlooked, yet the usages of wo3 does not contribute to what is left, i.e. the function of the additional usage.

The speaker of (59b) uses wo3 to remind or inform the hearer about the situation she may have not considered, but she does not intend to express the uncertainty of the hearer’s knowledge of the proposition. Although some of the usages of wo3 requires the speaker to assume the hearer knows the proposition, the function of gaa3-wo3’s additional usage is not fulfilled by that of gaa3. Therefore, the additional usage should be regarded as one exclusively belongs to the combination gaa3-wo3, rather than a compositional one contributed by both gaa3 and wo3.

5.3. Conclusion on additional usages

Besides the usages as combinations of the individual particles, both yone and gaa3-wo3 have an additional usage that is not completely made up by their components. In this section, the additional usage is analysed with several utterance examples, and it is found that although the additional usage contains certain properties that may be considered as given by the components, the remaining properties cannot be fully complemented by applying the usages of the individual particles. The additional usage is thus not a combination of these particles, but a usage that only applicable to the two SFP combinations themselves.

6. Conclusion

In the thesis, the usages of yone and gaa3-wo3 was dissected and analysed. It is found that the particle combinations consist of the usages of the individual components. However, not all of these usages of the individual particles are applicable in the combinations; only those with compatible use conditions can be combined.

Although clearly some of the usages of the combinations inherit from the components, there is still usage that cannot be explained by simply combining the individual particles. This additional usage is pinpointed with various utterances and contexts in both Japanese and Cantonese. More research could be done in the future to other SFP combinations for usages which are not a mere composite of the component particles.
Bibliography


