Statistical Internet Based Analysis of the Affixoid *-ma* in Modern Mandarin Chinese

Shelley Ching-yu Depner

National Cheng Kung University,

Department of Foreign Languages and Literature,

Taiwan

shelley@mail.ncku.edu.tw

Abstract. This study examines recent morphological development -*mā* 'mother' in Modern Mandarin Chinese, such as that in *dānqīn mā* 單親媽 'single mother'. Our data are taken from the *Taiwan News Smart Web* (2019). Collocation [13, 7] and Semantic prosody [25, 26] is the research framework of this study. Then the criteria for identifying affixoids [29, 8] will be taken for further examining the data. The goal of the study is to investigate the morphological and semantic attributes of [X-*ma*] nominals and to find out why the affixoids are productive. The research goals are: (1) to reveal the semantic prosody of [X-*ma*] nowadays; (2) to show whether the [X-*ma*] structures are compounding or affixation. The findings indicate that [X-*ma*] expresses more positivity than negativity. The –*ma* in Modern Mandarin is developing toward an affix, now an affixoid.

Keywords. [X-*ma*] construction, collocation, semantic prosody, affixoid, quasi-suffix.

1 Introduction

Mā 媽 'mother' is a kinship term and is currently linguistically active in Modern Mandarin Chinese (hereafter Modern Mandarin). This paper aims to investigate the use of [X mother] construction in modern Mandarin, for example, *dānqīn mā* 單親媽 'single mother', for the purpose of (1) revealing the semantic prosody of [X-*ma*] nowadays; (2) examining whether the [X-*ma*] structures are compounding or affixation. We collect the data from news corpus and the research framework is based on collocation, semantic prosody and the criteria of identifying affixoids (see Section 3 "Data and theoretical background" for detail).

For the convenience of technical processing, *mā* will be presented as *ma* without the tone diacritic unless when examples are given.

Affixation and compounding are much-researched topics in Morphology and Linguistics in general. For example, [30] examined French prefixoid *nouveau*, while [5] focused on affixoid *jie* in Taiwan Mandarin. Scholars also contrast languages to highlight linguistic diversity of affixoids, e.g., [1] compared Swedish and German, whereas [10] argued that the Dutch *über* is developed from English but not directly from German. In addition, [11] looked into affix ordering and conversion [31] retrieved data from Google News and corpora for the issue of debonding of affixoids.

Compounds delight in more research attention. [21] had a concern on *hoodia* and Japanese compounds, [16] examined the rise of new derivational affixes within the framework of Construction Morphology [2] Giving evidence from naming and lexical decisions, [17] discussed the effects of morphology on the processing of English compound words. [24] aimed to analyze non-classifying compounds and discussed lexical modifiers. [12] based on [22] of qualia structures N + N compounds in German. [20, 23] endeavored to examine different aspects of compounding.

Besides, [18] offered a solution by means of morphological typology when investigating classical compounds and affixoids.

Despite the attention that has been directed on affixation and compounding, there are a number of areas where further research is warranted.

The bulk of the paper is organized as below: section 2 introduces the data collection and theoretical background of the study. Section 3 gives exemplary interpretation of the data. After analyzing the data, a further discussion is given in section 4 about whether [X-*ma*] involves affixation or compounding. Finally, a conclusion is drawn in section 5.

2. Data and Theoretical Background

The [X-*ma*] construction works explicitly in daily conversation as well as in news reports, we thus collect the materials from *Taiwan News Smart Web* (www.tbmc.com.tw). This newspaper corpus collects more than 28,328,243 pieces of news in Taiwan dated from 1951 and it is updated every day by about 2,000 pieces. The corpus compiles politics, society, business, arts, sports, and supplement pages. For our study, at times dictionaries are referred to for looking up the meanings of the collected data. In total, 191,031 [X-*ma*] raw data were retrieved from the corpus (see Table 1).

Now I give details for the research framework of this study, which contains the following concepts and approaches: collocation, semantic prosody and criteria of identifying affixoids.

Collocation [13, 7] is a term in Corpus Linguistics. It is the frequent co-occur words before or after the target word. For example, the target word *day* often appear with *every* or *week*, thus *every day*, *weekday*, etc. In our database, collocations such as *xīng* 星 'star' and *dānqīn* 單親 'single parent' are often combined with the target word *ma*, thus *xīng mā* 星媽 'celebrity's mon' and *dānqīn mā* 單親媽 'single mother'.

This study deals with semantic prosody [25, 26]. The gist of this approach is to express the nature of words; words that often appear to be neutral yet convey hidden negativity or positivity.

For instance, *the weather is cold* is a statement of the weather, but the *cold* here has a negative connotation.

Table 1. [X-ma] and the token distributions in the newspaper corpues

Newspapers	Tokens
United Daily News	39,939
United Daily News (Local Pages)	30,684
United Evening News	10,193
Economic Daily News	3,924
China Times	46,039
Commercial Times	2,974
Liberty Times	13,799
Apple Daily	8,927
China Daily News	8,568
Central Daily News	2,500
Minsheng Bao	17,094
The Merit Times	3,299
Journal (Estrela) Seng Pou	3,091
Total tokens	191,031

* retrieved on 10.10.2019

The word "mother" has its semantic prosody as well. Does the semantic prosody display the cognition of the Mandarin speaker as the quality of a woman (have children or in maternity, be caring, capable of household, and so on), just as in comparison with fathers, the quality of a man (the head of the family, usually stronger, etc.) that are rooted in our mind and in pre-linguistic cognition?.

The criteria for identifying affixoids will be taken to further examine the data. Various criteria have been proposed to detect affixoids, three of them are widely accepted as ten [29, 8] believed; they are: (a) an etymological and formal link to an existing free stem, (b) semantic bleaching, and (c) increased productivity.

In other words, if –ma is an affixoid and the [X-*ma*] construction underwent affixation, one can trace the target affixoid back to its free morpheme. On the other hand, the meaning of ma bleaching or its semantic specificity is decreasing. Meanwhile, the use of [X-*ma*] shall be increasingly productive.

The next section begins with the analysis of the structure [X-*ma*] based on the research framework.

3 Semantic Analysis of [X-*ma*]

Common collocations of ma long before Modern Mandarin are like examples (1), referring to the speaker, and (2) juxtaposing with the other parent.

1. Wǒ *mā* shì jiātíng zhǔfù 我*媽*是家庭主婦. 'My *mom* is a housewife.'

2. Bà *mā* líhūn duōnián 爸*媽*離婚多年 'Father and *mother* have been divorced for many years.'

The collocation in the data discloses four major meanings that -ma usually attached to: the appearance, the emotion or passion, state of the person, and ability. Below are examples taken from the news corpus. Examples (3, 4) refer to the appearance of the directed mothers. The description of the outer appearance is general and not in detail, just that she is pretty (3) or the color of the hair (4). In our data, examples of this kind tend to show positivity. Example (5, 6) denote the mothers' emotion or passion. [Heart / affection + mother] is a typical construction of this kind. Different from the examples in the 'appearance' category, more dedicate sensations are described, but most nominals in this category express negativity. Referring to a mother's present state, it is neutrality and positivity that the speakers are noting (examples 7, 8).

3. *Jìng mā* pàn shuòshì xīnkǔ què zhídé *靚媽*拚碩士 辛苦卻值得 (04/11/2011, B1,[1] United Daily News (Local Pages)) *'Pretty mom*'s master's degree is hard to gain but the endeavor is worth it.'

4. Bào *bái fà mā* shōuróng rén lèi hǎn gǎiguò 抱*白髮媽*收容人淚喊改過 (05/08/2019, B2, United Daily News) 'Holding *the* white-hair *mom*, the inmate cries and repents.'

5. Línjiāqǐ zìshǒu *jiāozào mā* míngmó jiālǐ shī hǒu 林嘉綺自首*焦躁媽*名模家裡獅吼 (26/06/2019, C03, Apple Daily) 'Lin jia-chi, who shouts at home, confesses herself as an *anxious mom*.'

6. Jìzhě zhíjí *kǔqíng mā* bào yòu qiān 記者直擊 *苦情媽*抱又牽 (29/09/2015, A3, United Daily News) 'The reporter interviews *grieving mom* who hugs and holds hands kids.'

7. *Zuò yuè zi mā* juān gān chūshēng 25 tiān

yīng'ér *坐月子媽*捐肝出生 25 天嬰兒 (23/05/2019, A10, China Times) *'A mother that is in postpartum confinement* donated her liver for a 25-day-old baby. '

8. Zhēnzhū zhuì yōuyǎ *qìzhí mā* zhǎn fēnghuá 珍珠綴優雅 *氣質媽*展風華 (07/05/2008, C14, Apple Daily) 'Pearls accessorizes *elegant mom*.'

When speaking of a mother's competence and ability, Mandarin speakers apt to include omnidirectional mothers, such as *yǒng mā* 勇媽 'brave mom', *quánzhí mā* 全職媽 'full-time mom', *bù shí zì mā* 不識字媽 'illiterate mom', *èr dù jiùyè mā* 二度就業媽 'second-time-career mom', *zhì gōng mā* 志工媽 'volunteer-worker mom', and *shī zhì mā* 失智媽 'mentally retarded mom'. *Quánzhí mā* 全職媽 'a mother that has a full-time job' and *dānqīn mā* 單親媽 'single mother' were referred to as *quánzhí māmā* 全職媽媽 and *dānqīn māmā* 單親媽媽, respectively, for the metrical purpose of avoiding light-headed nominals.

Then, this seems to be altered when –ma word formation is at work. The dropped reduplication shows the tendency of processing –ma as an affixoid rather than a noun. The next section will continue this issue. Again, we locate more data with neutrality and positivity in this category. Table 2 lists the semantic prosody of [X-*ma*] samples. Context is not taken into consideration in this regard. We see that the presented positive tokens take 6.06% of the total data, whereas the negative tokens only 0.019%. The positive [X-*ma*] are used frequently, but the negative ones are rarely used.

The collocates of –ma can direct to specific persons, can be the children of the mother, either a famous figure or an ill child. *Kē mā* 柯媽 'Ko's mom' is the mother of the Taipei mayor Ko Wen-je (also known as KP), *Bǎo mā* 寶媽 'Bao mom' is the mother of *Tsang Po Yee* 曾寶儀 'Bowie Tsang', a famous host of ceremonies or TV programs in Taiwan and Hong Kong. It seems that the names of the mothers are valued on account of their

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[1] This refers to the page in the newspaper.

famous or successful children. Special cases are like *huā mā* 花媽 'flower man' who is the former mayor of Kaohsiung city Chen Ju 陳菊, also known as *Jú-jiě* 菊姐.

She is not a mother but is addressed *Hua ma* as a nickname. Furthermore, the nominals *zì bì er mā* 自閉兒媽 'the mother of an autism son' and *hǎn mā* 罕媽 'mother of children with rare disease' point out the mothers' love, hardship, and sticking up with the ill children through thick or thin. Different from the collocates of -*ma*, when examining the collocations of *ba* 'father', the initial observation shows that it is the illness of the father and his occupation take over the semantic domains, such as *hǎn bìng bà* 罕病爸 'a dad who's got rare disease', *ruòshì bà* 弱視爸 'amblyopic dad', *zhōngyī bà* 中醫爸 'Chinese medicine physician dad', and *gēshǒu bà* 歌手爸 'singer's dad'. The tradition labor division of a Chinese family is in the cognition of the Mandarin users.

On the other hand, our data of [X-*ma*] also reveal the opening up of the society and the change of the Taiwanese social structure. *Gān mā* (9) and *lǎo mā* (10) are traditional; having a godmother is customary from ancient days and the adjective *lǎo* 'old' in *lǎo mā* does not show depreciation at all, but is a diminutive (see Section 4 below). A *měi mó mā* (11) is spoken out, a *hǔ mā* (12) and a mother with athletic talent (13) are revealed show the releasing of the traditional weight. Mothers were not supposed to be beautiful or to show beauty and a much too severe mother was not an issue to be reported. It was not that mothers were always tender and gracious. In a conventional Chinese society once a woman got married, her hairstyle and color of her dress [9] would be changed to be more conservative and the outer appearance was not her merit anymore. A mother should have all her attention on serving the husband and educating children [32].

Furthermore, there are more and more foreign brides (14), and the increasing love to pets gained the title 'dog's mam' (15) for *Chen Ting-Ni* 陳庭妮 'Annie Chen' (a Taiwanese actress) and the dog friends owing to the change of the social structure and current fashion in Taiwan.

 Overall, the responsibility, expected role, the look and feelings of a mother in the modern society

Table 2. The semantic prosody of [X-ma] samples

Positive samples	Tokens	Percentages
lǎo mā 老媽 'mom'	6,727	3.52%
zhì gōng mā 志工媽 'volunteer-worker mom'	1,133	0.59%
xīng mā 星媽 'celebrity's mom'	1,185	0.62%
àixīn mā 愛心媽 'caring mom'	1,477	0.77%
huā mā 花媽 'flower-mom'	826	0.43%
bǔrǔ mā 哺乳媽 'breastfeeding mom'	133	0.069%
yǒng mā 勇媽 'brave mom'	105	0.055%
Total	11,586	6.06%
Negative samples	Tokens	Percentages
bēiqíng mā 悲情媽 'sadness mom'	13	0.0068%
bù shí zì mā 不識字媽 'illiterate mom'	2	0.0010%
bēiqíng mā 恐怖媽 'horror mom'	9	0.0047%
xùjiǔ mā 酗酒媽 'alcoholic mom'	6	0.0031%
jiāozào mā 焦躁媽 'anxious mom'	1	0.0005%
jiépǐ mā 潔癖媽 'mysophobic mom'	1	0.0005%
xīn suì mā 心碎媽 'heart-broken mom'	4	0.0021%
Total	36	0.019%

* retrieved on 11. October 2019

are expressed in our data either assigned by the new trend, or realized and revealed over the years.

9. Nǚ xiāofáng yuán jiēshēng jí chǎn wá jiāshǔ huānxǐ yāo dāng *gān mā* 女消防員接生急產娃家屬歡喜邀當*乾媽* (08/11/2018, A10, Liberty Times) 'Female firefighters deliver baby, family members asks them to be their *godmother*.'

10. Dài *lǎo mā* shǎng huā 帶*老媽*賞花 (03/13/2019, D4, United Daily News)'Taking *mom* to see the flowers.'

11. Jiātíng, shìyè, měimào jiāngù kōng fú *měi mó mā* kào gōngzuò zhuǎnhuàn xīnqíng 家庭、事業、美貌兼顧 空服*美魔媽*靠工作轉換心情 (13/05/2012, A3, China Times) 'Balancing between family, career, and beauty, *beautiful mother* who works as a flight attendant changes mood by her career.'

12. *Hǔ mā* guǎnjiào tài huǒbào *虎媽*管教太火爆 (07/06/2019, D08, Liberty Times)'*Authoritarian mom*'s discipline got too strict.'

13. *Jǔzhòng mā* yǎng 19 wá chénhántóng *舉重媽*養 19 娃 陳涵彤 (24/12/2018, A08, Apple Daily)'*Weightlifting mother,* CHEN,HAN-TONG, raises 19 babies.'

14. *Xīn zhùmín mā* lǜ 4 zi yǎn tàiguó tónghuà

gùshì 新住民媽率 4 子 演泰國童話故事 (03/07/2016, B2, United Daily News (Local Pages))'*Migrant mother* bringing 4 sons play Thai fairy tales.'

15. Chéntíngnī bǎ shǐ bǎ niào lè dāng *gǒu mā* 陳庭妮把屎把尿樂當*狗媽* (12/04/2018, A10, Liberty Times)'Annie Chen is happy to be *her dog's mom* and she keeps them clean.'

4. Compounding or Affixation

The above data analysis shows the semantic development of [X-*ma*] construction with reports taken from newspapers that in turn express the development of the society. We understand that –*ma* in [X-*ma*] instances do not behavior like a free morpheme. It is a suffix-like element, although it is not a total suffix or affix. To answer the second research question, whether the [X-*ma*] structure is compounding or affixation, the three criteria mentioned about an affixoid, viz. semi-affix, will be applied in this section. They are: an affixoid should have (a) an etymological and formal link to an existing free stem, (b) increased productivity, and (c) undergone semantic bleaching. The first criterion is self-evidenced, -*ma* is generated from the free stem -*ma* 'mother' in Mandarin, which we also see from the above semantic analysis.

In addition, -*ma* is productive. The collocation of [X-*ma*] structure in the Modern Mandarin can be adjectival bases (e.g., *lǎo* 老 'old' in *lǎo mā* 老媽 'old-mother; my mom'), verb phrases (*zuò yuè zi mā* 坐月子媽 'a mother that is in postpartum confinement'), noun phrases (*qìzhí mā* 氣質媽 'elegance mom'), or sentences (*zī shōu mā* 資收媽 'resource-collect-mom'). The *lǎo* is a documented Mandarin prefix to address referents [19], an expressive meaning is conveyed; namely, a diminutive to express endearment. The VP *zuò yuè zi* 'to be in postpartum confinement' is a common practice in Taiwan and the NP *qìzhí* 'elegance' is usually an admiration said to a woman, but seldom to a mother before just as the reason pointed out in the case of *měi mó mā* (11) and *hǔ mā* (12).

The *zī shōu mā* 資收媽 'resource-collect-mother' (16) is worth discussing too. This construction has achieved [verb phrase + *ma*] and has a morphological gain in that the modifier is a verb-like bi-syllabic structure indicating the mother's job. In fact, the modifier is a multi-syllabic statement; *zīshōu* 資收 'resources-retrieve' is the contraction of *zīyuán huíshōu* 資源回收 'recycle'. In other words, *zīshōu mā* 資收媽 is the contraction of the sentential statement *Māmā shì zīyuán huíshōu yuán* 媽媽是資源回收員 'A mother whose occupation is recycling'.

Once the suffixation is at work, the predicate is turned into a verb phrase-like adjectival structure in order to be able to coordinate with the morphosyntactic outfit and to meet the semantic stability. Morphologically, the nominals could be in sentential form and undergo omission, reversion, modification, etc. before reaching suffixation formatting with the affixoid. The motivation why suffixation is at work is because of the convenience of the –*ma* affixoid use and in turn the high frequency of its use on the internet and in news reports as well as in daily event reporting. The other nominal *suì niàn mā* 碎念媽 'nagging mom' (17) underwent a similar morphological practice S[[x]$_{NP}$ [Vy]$_{VP}$] → NP[[y]$_{NP}$ [V]$_{VP}$ person affixoid]. This process from an S to an NP is achieved by affixation, not compounding.

16. Kǎo shàng qīng dà yīnyuè xì…gǎnxiè *zī shōu mā* 考上清大音樂系 …感謝*資收媽* (21/08/2019, C05, China Daily News) 'Got into the Music Department of Tsing-Hua University…Thanks to *recycle mom*.'

17. Báibīngbīng jìn chúfáng biàn *suì niàn mā* 白冰冰進廚房變*碎念媽* (01/02/2016, C4, China Times) 'Bai, Bing-Bing becomes a nagging mom when she enters the kitchen.'

In fact, part of speech can alter along with the development of meaning and pragmatic application.

That is, the word formation, syllables, and semantic features are mutually motivated. Below examines the productivity and high frequency of –ma by looking into the morphological structure and media use of [X-*ma*].

We search seven sample [X-*ma*] nominals and present them in Table 3 to confirm the rapid development of the use of the person affixoid -*ma*. We can clearly see the change of the searching

nominals over the years (1970-2019), the first appearance of the samples in the newspaper corpus and their increasing use indicated by the current tokens showed via google search in October 2019. For example, *jìng mā* 'pretty mom' first appeared in 1998 in the corpus and a google search today presents 21,800,000 hits. *Xīng mā* 'celebrity's mom' has even earlier record (1970) and more intensive use (501,000,000 hits).

The last sample [X-*ma*] in Table 3 is *xīn zhùmín mā* 新住民媽 'migrant mother'. As mentioned, this innovation has its social background. The female immigrants stay in Taiwan because of marrying Taiwanese men and they become migrant mothers after childbirth. According to [14], there is no official record documented the non-registered migrant wives before the year 1994. In 1994, there were 4,899 registered migrant wives in Taiwan, yet the booming immigration in the document of *Department of Household Registration Affairs*, *MIO* (2005b) indicated that the number of them had reached 319,735 in 2005, that is about sixty times in those ten years. The current entry is 504,748 in 2019 August. As for the use of this [X-*ma*], a Google search today of *xīn zhùmín mā* 'migrant mother' presents 4,940,000 hits. We search the news corpus to show the increasing use of the [X-*ma*] as in Figure 1.

We see that [X-*ma*] is productive and frequently used. Yet, when we examine the third criterion, semantic bleaching, we found that it cannot be applied well to –*ma*. In our data, instances such as *huā mā* 花媽 'hua-mother; the former mayor of Kaohsiung city', *yǒu yīng mā* 有應媽 'a religious goddess who is supposed to make all worshippers' dreams come true.

These –*ma* share core semantic properties with the content word, *ma* meaning 'mother', but do not refer to mothers. Near 11% of our data does not refer to a birth mother. Consequently, -*ma* is a developing affixoid. The next section gives a concluding remark for this study.

5 Concluding Remark

This study delves into recent morphological development -*ma* 'mother' in Modern Mandarin Chinese. Our research goals are: (1) to reveal the

Table 3. The frequency of sample [X-ma]

[X-*ma*]	1st occurrence / year	current index*
jìng mā 靚媽 'pretty mom'	1998	21,800,000
là mā 辣媽 'hot mom'	1994	27,200,000
xīng mā 星媽 'celebrity mom'	1970	231,000,000
zhìgōng mā 志工媽 'volunteer-work mom'	1989	10,300,000
èrdùjiùyè mā 二度就業媽 '2nd career mom'	2005	6,240,000
dānqīn mā 單親媽 'single mother'	1986	11,800,000
xīn zhùmín mā 新住民媽 'Migrant mother'	2005	4,940,000

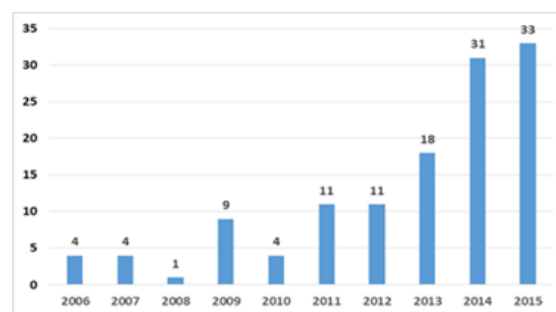* The current index is recorded on October 11, 2019

Fig. 1. The tokens of xīn zhùmín mā 新住民媽 in Taiwan News Smart Web from 2006 to 2015

semantic prosody of [X-*ma*] nowadays; (2) to show whether the [X-*ma*] structures are compounding or affixation. The mechanism of [X-*ma*] construction in terms of semantic analysis, productivity and frequency of use is discussed.

The collocations of the data disclosed four major meanings that -*ma* usually attached to, they are: the appearance, the emotion or passion, state of the person, and ability.

The Mandarin speakers do pass [X-*ma*] the semantic attributes of a real-world mother that manifests the speaker's pre-linguistic cognition.

Additionally, innovative semantic elements are added to generate more [X-*ma*] nominals credited to the growth of the society.

The semantic analysis indicates that [X-*ma*] expresses more positivity than negativity.

Moreover, the [X-*ma*] nominals are mostly affixation and –*ma* in Modern Mandarin is acting as an affixoid for the reason that morphologically its collocations can cover adjective, noun phrase, noun + verb + noun, or even sentences. [X-*ma*] is productive and frequently used. However, -*ma* is currently in most cases (89%) still referred to a

mother, which is different from *–nan* 'man' or *–jie* 'elder sister' that can act as gender indicators [5]. Nevertheless, I will argue that the flexibility and frequency of use of *–ma* promise its further development from a solid content noun to an affix. Also the dropping reduplication hints to the presence of the developing affixoid in "the group of person affixoid" [15, 28, 3, 5].

In sum, we may exclaim that *–ma* will develop into the line where other person affixoids do, or it will have its own vein that holds the semantic properties of a mother triggered by, as Depner (2018) indicated, at the time when Internet continues to grow, the openness of the modern media and the current cognitive salience of the Mandarin users.

Acknowledgments

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