From Volition to Obligation:
A Force-Involved Change through Subjectification[*]

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This paper aims to show the importance of subjectification (Traugott 1989, Langacker 1990) for the emergence of deontic modals with the development of the deontic modal ai^3 in Southern Min. Materials under examination are early texts of Southern Min in the playscripts of *Li Jing Ji* 'The Legend of Litchi Mirror' and a collection of folk stories in contemporary Southern Min. The deontic modal ai^3 in Southern Min is assumed to have developed from the intentional ai^3 through subjectification on the basis of their parallel force-dynamic structures which represent the preservation of their force interactions throughout the development of the deontic modal ai^3 (Talmy 2000). Because subjectification is also known to contribute to the emergence of epistemic modals (Traugott 1989, Sweetser 1990), it can then be seen as a general process through which force-involved modals can emerge.

Key words: subjectification, force dynamics, volition, deontic modal, intentional verb

1. Introduction

The structure of human language is reflective of human cognition (Berlin & Kay 1969, Sweetser 1990) and determined by the perceptual system (Fillmore 1971, Clark 1973). The development of modals is also affected by cognitive processes. One of these processes is subjectification, which increases speakers' involvement in the proposition or grounding of a predication (Traugott 1989, Langacker 1990). Subjectification is assumed to contribute to the emergence of epistemic modals since a speaker's perspectives or roles are specifically important for epistemic modals (Sweetser 1990). Rather than center on the relationships between premodals[1] and modals, studies on modal emergence affected by subjectification often focus on deontic-epistemic polysemy (Sweetser 1990) or on the rise of epistemic modals from deontic modals (Traugott & Dasher 1987) due to the subjective nature of epistemic

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[1] According to Lightfoot (1979:98), *premodals* refer to the precursors of modals, which were main verbs before they became modals with regard to their grammatical behaviors, such as person-number agreement, negative placement, inversion, and the possibility of taking nominal complements. For example, the premodal of the assumptive modal *will* in the period of Old English (ca. 600-1125) was *willan*, which was a lexical verb with volitional meanings 'to want' or 'to desire' as it was used in the sentence *ic wille gæn* 'I want to go' (Visser 1963-1973:502). In this study, the premodals of the deontic modal ai^3 refer to lexical verb ai^3 with volitional or intentional senses such as 'to want' and 'to intend'.

modals[2] (Lyons 1982, Palmer 1990). Though it has been observed that the gradience of subjectivity does exist for both deontic and epistemic modals (Lyons 1982, Coates 1983, Langacker 1985, Palmer 1990), and that the polysemous ambiguities induced by subjectification are not uncommon for both kinds of modals (Traugott 1989, Sweetser 1990), discussions regarding the increase of subjectivity in the process of emerging deontic modals are still relatively overlooked.

To show the importance of subjectification in the emergence of deontic modals, the development of the deontic modal ai^3 in Southern Min (henceforth SM) is under careful examination through the investigation into materials of a modern collection of *folk storybooks of Southern Min* (henceforth FS) and the playscripts of *Li Jing Ji* 'The Legend of Litchi Mirror' published throughout the 16th century to the 19th century, which represent early texts of SM. It is assumed that a kind of semantic force was acquired when ai^3 was used as a volitional verb, and the force has been preserved throughout the process of the change from the volitional verb ai^3 to the deontic modal ai^3. Though the force of ai^3 has been preserved, its interactional domain changed from being intrapsychological, in the case of the volitional ai^3, to being interpsychological, in the case of the deontic modal ai^3, since deontic modals require external authorities to exert impositions on their subjects. Specifically, development of the deontic modal ai^3 has been affected by subjectification, which makes sentences with ai^3 increasingly reliant on the context for appropriate interpretation.

Similar proposals have been suggested for the contingency between deontic modals like *should* or *must* in the sentence, *You should stay in the house*, and non-modal performative verbs like *require* and *forbid* in *I require you to stay in the house* (Talmy 2000:447). Also, root-epistemic polysemy of English modals, which brings about the ambiguous deontic-epistemic interpretations of deontic modals such as *must* in the sentence, *John must be home*, relates to the process of subjectification (Sweetser 1990:49) by metaphorically extending the sociophysical potentiality of deontic modals to the possibility of reasoning. Throughout the process, the sociophysical force of deontic modals has been preserved yet changed to express the speaker's premises within the domain of epistemic modals (Sweetser 1990:59-61). Based on the effect of subjectification on modals with root-epistemic polysemy, this study, which focuses on how subjectification affects the change from premodals to deontic modals, can provide evidence for a subjectivity-defined system of modals with the most objective premodals on the one side of the system and the most subjective epistemic modals on the other side of the system. Deontic modals like the modal ai^3 in SM then represent the crucial connecting area between the two of them.

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[2] Epistemic modals are highly related to the speaker's judgments, attitudes, and viewpoints of the truth-value or factual status of a certain proposition (Palmer 2001:24).

2. Building the background

2.1 Subjectification and force dynamics

Two primary theoretical foundations of this study are subjectification (Traugott 1982, Sweetser 1984, Langacker 1985, 1990, Traugott & Dasher 1987) and force dynamics (Talmy 2000). Subjectification is concerned with changes increasingly based on external[3] evidence for "reflecting evaluative, perceptual, or cognitive" aspects of propositions (Langacker 1990:16). This is assumed, in the current study, to motivate the change from the volitional verb ai^3 to the deontic modal ai^3. Force dynamics refers to "how entities interact with respect to force" (Talmy 2000:409) and it provides an explanation for the existence of imposed obligation on the subject of the deontic modal ai^3 in the absence of an explicit causer of the imposition.

Subjective expressions reflect a speaker's perspective of a speech event. Such expressions are recurrently extended from more objective representations to more subjective representations (Langacker 1990:5), as illustrated in Figure 1.[4]
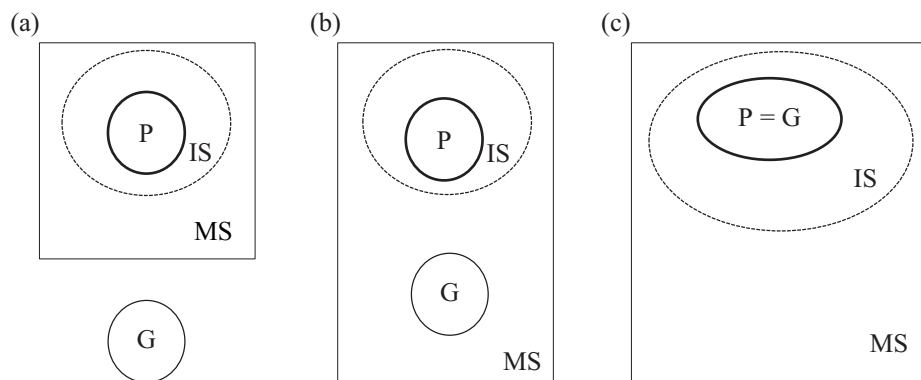
Figure 1. Degrees of subjectivity (adapted from Langacker's Figure 2 (1990:10))

The recurrent shift from more objective expressions to more subjective ones, which embrace higher degrees of subjectivity, may lead to lexical or grammatical changes. Degrees of subjectivity can be specified by the involvement of speakers (*conceptualizers* in Langacker's sense) with various degrees of saliency: profiled,

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[3] Two senses of *external* are considered in this paper. The concept of *external* under the schema of Langacker's subjectification refers to factors that are outside a proposition and are more subjective. In contrast, the sense of *external* that Palmer (1974:103) adopts involves conditioning factors that are made by agents other than the subjects of deontic modals, i.e., external to the predication.

[4] In Figure 1, G (abbreviation of *ground*) represents potential users of language expressions in a speech event. The bold circle refers to a profiled focal point, which can be occupied by either a non-G participant, marked as P for 'profile', or a G participant, noted as P EQUALS G (P = G). The box labeled MS represents 'overall maximal scope', that is, the full expanse of the viewer's perceptual field. Finally, the dashed circle labeled IS stands for 'immediate scope', which is also referred to as the 'onstage scene' or the 'objective scene', according to Langacker (1990:7-8). Generally, G is not profiled if it is outside of the dashed IS, and it is not salient if it falls outside of the field labeled as MS.

non-profiled, or non-salient, according to the perspective scopes within which they are perceived. Figures (1a), (1b), and (1c) illustrate corresponding situations in which the speakers function as non-salient and non-profiled, salient but non-profiled, and salient as well as profiled roles in the predication. Figure (1a) represents the most subjective type of expressions with the speaker (the circled G) lying outside the maximal scope (MS) of the predication; hence it is non-salient, and out of the immediate scope (IS) of the predication; hence it is non-profiled.[5] If, on the other hand, the speaker is within both the MS and the IS, as shown in Figure (1c), the subject which is objectively construed represents the focal point of the predication; hence it is salient and profiled. Between the subjective Figure (1a) and the objective Figure (1c) lies Figure (1b), in which a speaker is within the MS but out of the IS; hence it is salient but non-profiled.

Subjectification is readily observable from spatial prepositions. Examples in (1) exemplify various degrees of subjectification (Langacker 1990:17-19):

(1) a. Vanessa jumped across the table.
     b. Vanessa is sitting across the table from Veronica.
     c. Vanessa is sitting across the table from me.
     d. Vanessa is sitting across the table.

The preposition *across* can define real-world spatial relationships or hypothetical conceptual movements, which are determined by involvement of the speakers. The context of *across* in (1a) represents the least subjective case of the four since both the source and the target of the spatial movement are objectively construed. Example (1b) is more subjective than (1a) since the real-world physical movement in (1a) is substituted by a spatial relationship between Vanessa and Veronica in (1b), with the table being an objective landmark. (1c) is even more subjective than (1b) because it includes a viewer who not only builds and tracks the conceptual movement, but also participates in the hypothetical movement as one of the reference points. The viewer's dual role in (1c) is based on her psychological 'divided self' which can split a single person in order for her to serve two functions.[6] Finally, (1d) illustrates the most subjective way of expression because the prepositional phrase carrying the reference point *me* in (1c) turns to be completely absent from the sentence, forcing the

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[5] Langacker illustrates the distinction between *maximal scope* and *immediate scope* of predication with the lexeme *elbow*. For the reference of *elbow*, the maximal predication is the conception of the body as a whole, while the immediate scope of predication is the conception of an arm. If the elbow is profiled, then the arm is the conceptual base and the immediate surrounding area (Langacker 1990:9).

[6] The term *divided self* is adopted by Talmy to account for the force interaction, or impingement, within a single psyche (Talmy 2000:431). The use of *divided* signifies the split of a single mind for the purpose of serving dual mental functions within the same individual.

movement triggered by *across* to start off from the viewer's subjective position, which is now outside the sentence but within the context. The examples given in (1) thus collectively show the possibility of gradually changing the degree of subjectivity.

The interaction of force can be well depicted by the theory of force dynamics (Talmy 2000). Basic force dynamic relations reside in objective force interactions in the physical world, such as the exertion or resistance of force, and the overcoming or blockage of the exertion of force. Domains in which forces interact with each other can be physical, psychosocial, intrapsychological, or interpsychological (Talmy 2000: 409).[7] Corresponding examples are shown in (2) (adapted from Talmy 2000:412):

(2) a. The ball kept on rolling along the green.   (physical)
      b. John can't go out of the house.   (physical/psychological)
      c. He refrained from closing the door.   (intrapsychological)
      d. She gets to go to the park.   (interpsychological/sociopsychological)

In (2a), the force of *roll* comes from an external source, such as *wind*, and is against the internal tendencies of the ball. (2b) is ambiguous. If the reason why John does not go out of the house is a locked door, the domain is physical. On the other hand, if what blocks John's intention to go out is a person, the domain would be psychological. Psychological domain can be further divided into intrapsychogical and interpsychogical types. For the intrapsychogical situation in (2c), it is the subject *he* who is responsible for holding himself back from closing the door. In contrast, *get* in (2d) implies that the desire of the subject *she* is permitted by an external authority. The interaction domain would be interpsychological if the authority is specified, or be sociopsychological if the authority represents non-specific force in a social setting.

According to Talmy (2000), the verb *refrain* in (2c) features 'divided self' which shows that the imposer and the blocker of the force are identical with each other. The force-dynamic patterns of 'divided self' are shown in Figure 2.[8] The dotted boxes in Figure 2 indicate that the force interactions occur within a single psyche rather than between individuals while the numbers above the boxes represent the hierarchy of

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[7] The difference between the *psychosocial* and the *sociopsychological* domain is terminological. While *psychosocial* is adopted by Sweetser (1990) to refer to the force interaction between an agent and a source of force external to the agent, *sociopsychological* is used by Talmy (2000) for the same concept. Moreover, since *sociopsychological* force interactions exhibit patterns of interpersonal interactions, they are by nature *interpsychological*, i.e., between different individuals in a social setting (Talmy 2000:413), though the *sociopsychological* domain is slightly different from the *interpsychological* domain in that the former emphasizes unspecified social impacts on the force interactions.
[8] Symbols in Figure 2 represent the following: *circle* as Agonist, i.e., the force-compeller; *concave figure* as Antagonist, i.e., the one with reaction force against the Agonist; *dot* as toward rest; *greater figure* as toward action; *solid line* as resultant state; *plus figure* as stronger in relative strength.

prominence in the surface representation. Being unmarked with numbers leads to non-saliency and absence from the predication, as illustrated by the removal of the blocking force from the sentence, *1 refrain from VPing*, shown in Figure (2b). In contrast, being marked with numbers leads to presence in the predication, though the position of occurrence still needs to be determined by the relative saliency of items ranked with numbers. For example, in Figure (2a), a blocking force marked as 1 occupies the most prominent position, in this case the subject position, making the sentence to be realized as *1 hold 2(=self) back from VPing*.

(a)   2   1   (b)   1

[1 hold 2(=self) back from VPing]   [1 refrain from VPing]
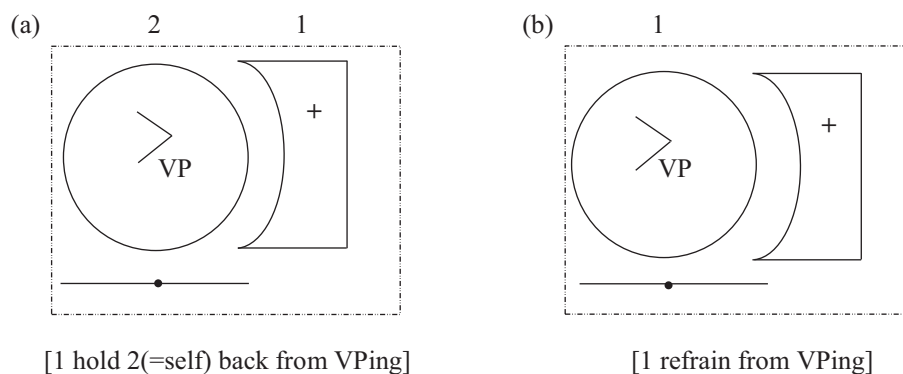
Figure 2. Force-dynamic patterns of *hold oneself back* and *refrain* (adapted from Talmy 2000:431)

Similar to the verb *refrain*, volitional verbs also involve intrapsychological interactions that are metaphorically extended from physical force interactions since 'wanting' contains "psychological pressures pushing toward the realization of some act or state" (Talmy 2000:430). In the case of a volitional verb, it is the compeller who is marked as 1 while profiled as the subject. Force-dynamic patterns can also be used to describe the force interactions and profiling strategies in the case of a deontic modal. In this sense, force dynamics is a useful approach for building a general basis of comparison among different kinds of force-involved modals or verbs in order to observe their interactions and relationships.

2.2 Previous studies on the change from volition to obligation

In her paper about semantic change in English, Traugott argues for three closely-related tendencies of change, of which the first can feed the second, and both can feed the third. The three tendencies are listed in (3) (Traugott 1989:34-35):

(3)   **Tendency I:** Meanings based in the external described situation > meanings based in the internal (evaluative/perceptual/cognitive) described situation.
Tendency II: Meanings based in the external or internal described situation > meanings based in the textual and metalinguistic situation.
Tendency III: Meanings tend to become increasingly based in the speaker's subjective belief state/attitude toward the proposition.

Tendency I accounts for situations in which items are metaphorically extended to abstract functions. For example, the verb *touch*, which was once used exclusively for physical relations, acquired perceptual sense 'be grateful or pleased by others' at the end of Old English (ca. 600-1125). Tendency II explains the shift from mental-state to speech-act verbs. For example, *observe* has changed from having perceptual or mental senses to performing the act of 'state' or 'comment'. Finally, Tendency III describes subjectification in diachrony. For example, the epistemic assumptive meaning of *go* requires speaker's involvement, which is of less importance in its original spatial meaning. Simply put, Tendency I marks the rise of perceptual expressions, Tendency II specifies the rise of force-involved expressions out of mental or non-mental uses, and Tendency III notes the rise of subjective meanings. It appears that the development from the volitional verb ai^3 to the deontic modal ai^3, which is more subjective than it was originally, qualifies for Tendencies II and III.

Following Searle's claim (1983:30) that *wanting* is intentional and propositional, the extension of ai^3 from the psych verb meaning 'love' to the volitional verb fulfills Tendency II in (3).[9] Moreover, being 'discourse-' or 'speaker-' oriented (Palmer 1974 and Hsin 1999, respectively), the deontic modal ai^3 is subjective in the sense that its subject has undergone a certain condition of imposition external to the subject and the predication. Therefore, the rise of the deontic modal ai^3 can, in a broad sense, be subsumed by Tendency III. Since Tendency II feeds Tendency III, according to Traugott (1989:34), verbs of volition or intention such as *want* used in the sentence, *I want you to buy me the house*, can change into deontic modals through processes of subjectification which reduce the quantity of arguments represented in the predication.

This change is exemplified by the evolution of the Georgian obligative modal *unda*, which evolved from a regular verb meaning 'want' by way of clausal reanalysis (Harris & Campbell 1995:173-174).[10] As shown in (4a), the external argument of the

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[9] Based on Searle's assumption, that volitional verbs take nominal complements is misleading since the underlying semantic structures of sentences like, **I want your house next summer**, are equal to the semantic structures of volitional verbs taking verbal or clausal complements such as, **I want I have your house next summer** (Searle 1983:30).

[10] Abbreviation conventions in this article are as follows: ASP: aspect; ASSU: assumptive certainty; AUX: auxiliary; BE: copula; CAU: causative; CL: classifier; CONN: connector; DAT: dative; DEO:

verb *unda* meaning 'want' and the embedded verb *gaak'etos* can be agreed or not agreed with each other regarding their referential properties, and the complementizer can optionally occur since (4a) is in essence bi-clausal. However, when *unda* was reanalyzed as a modal, as shown in (4b), the sentence became monoclausal. In consequence, no complementizer could ever exist, and the agreement of the referential properties between the modal *unda* and the embedded verb *gaak'etos* became obligatory. The distributions of Georgian *unda* shown in (4) thus exemplify a change from a volitional verb to a deontic modal by means of clause reunification.

(4) Development of Georgian modal *unda*   (Harris & Campbell 1995:173-174)
    a.   mas$_i$ **unda**   (rom)   gaak'etos$_{i/j}$
        s/he.DAT   **s/he.want.it**   COMP   s/he.do.it.SBV
        'S/he$_i$ wants to do it.' or 'S/he$_i$ wants him$_j$/her$_j$ to do it.'
    b.   man$_i$ **unda**   (*rom)   gaak'etos$_i$
        s/he.NAR   **M**   s/he.do.it.SBV
        'S/he should do it.' or 'S/he must do it.'

Recent studies shedding light on the development and distribution of ai^3 in SM include Chang (2009) and Lien (2013). Chang (2009) investigates the diachrony of the verbs of volition ai^3 and beh^4, while Lien (2013) explores the relationship between the desiderative modal beh^4 and the volitional verb ai^3. Ai^3 as a verb in contemporary SM means 'love', 'prefer', 'tendency', 'intend', and 'need' according to Lien (2013), as summarized in (5a-e).[11] Among them, (5d) characterizes a pivotal construction in which the object of the intentional verb ai^3 also serves as the subject of the embedded verb siu^1-$tsoo^1$ 'collect rents'.[12] The pivotal construction is crucial to the emergence of the deontic modal ai^3 since it explicitly introduces a causer, e.g., lau^7-pe^7 'the father' in (5d), which is distinctive in referential property from the causee into the predication, by means of which a semantic ground featuring interpsychological force relationships required by the deontic modal ai^3 can be obtained.

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deontic (obligative) modal; DG: degree; DIM: diminutive; EXT: existential; FUT: futuritive; INT: intentional; LIN: linker; M: modal; NAR: narrative; NEG: negative; PL: plural; POSS: possessive; PRE: prefix; PRT: particle; SBV: subjunctive; SG: singular.

[11] Romanization used in this study conforms to the revised *Taiwan Language Phonetic Alphabet* (TLPA) officially announced on October 2006. Tones are shown from 1 to 8 with the 6th tone being vacuously applied as a filler to meet the convention of the eight-tone system.

[12] Sources of cited materials in the examples are noted as [Source Number] with the source being abbreviated as *FS* for the collection of *folk story books* collected by Prof. Wan-Chuan Hu at the end of the 20th century, and as *JJ, WL, SZ, GX* for *Li Jing Ji* 'The Legend of Litchi Mirror' by the title of the Emperor at the time when the version was found published. The titles are shortened as *JJ* for *Jia-Jing*, which was published in the year of 1566, as *WL* for *Wan-Li*, which was published in the year of 1581, as *SZ* for *Shun-Zhi*, which was published in the year of 1651, and as *GX* for *Guang-Xu*, which was published in the year of 1884. The *Number* followed by the *Source* tagged to the end of each example indicates the identification serial number in the corpus of NTHU.

(5)   a. 伊足愛讀冊。   [FS Miaoli 72.09]

i^1 $tsiok^8$ **ai^3** $thak^4$-$tsheh^4$

3SG   DG   **love**   read-book

'He likes reading very much.'

b. 看你愛佗一隻，你牽去。   [FS Tainan 26.06]

$khuann^3$ li^2 **ai^3** to^2 $tsit^4$ $tsiah^4$, li^2 $khan^1$-khi^3

see   2SG   **prefer** which one   CL   2SG   take.away

'Just see which one you want and take it away with you.'

c. 真愛睏啊。   [FS Xinshe 122.08]

$tsin^1$ **ai^3** $khun^3$ ah^0

DG   **tend.love** sleep   PRT

'So sleepy!'

d. 老父愛這个第二子到鎮上收租啦。   [FS Xinshe 170.16]

lau^7-pe^7 **ai^3** $tsit^4$-e^0 te^7-ji^7-$kiann^2$ kau^3 tin^3-$siong^7$

PRE-dad   **INT**   this-CL   PRE -two-son   to   downtown

siu^1-$tsoo^1$ lah^0

collect-rent   PRT

'The father wanted the second son to go to downtown to collect rents.'

e. 講這組啊若買起來是愛幾仔萬。   [FS Xinshe 146.07]

$kong^2$ $tsit^4$-$tsoo^1$ ah^0 na^7 bue^2-khi^2-lai^5 si^7 **ai^3**

say   this-set   PRT   if   buy-up-come   BE   **need**

kui^2-na^7 ban^7

several   ten.thousand

'It is said that this set costs tens of thousands of dollars.'

In general, the psych verb ai^3 meaning 'love' or 'tendency' as shown in (5a) and (5c) prefers individual-level readings of the embedded verbs, i.e., stative and generic interpretations (Carlson 1977).[13] The preference to stative interpretations motivates psych verb ai^3 to take degree adverbs as modifiers, such as $tsiok^8$ in (5a) and $tsin^1$ in (5c). On the other hand, ai^3 is predominantly used in contemporary SM as a deontic

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[13] A reviewer of this article suggests that a distinction of *stage-level* and *individual-level* be made with regard to verbal complements. According to Carlson (1977), individual-level predicates represent generic and permanent properties, while stage-level predicates express temporary or transitory events. Carlson also argues that these two readings might arise in the case of simple verbs like *walk* or *eat* because such verbs have multiple meanings, and can be interpreted as either stage-level predicates specifying the stages of predicates or individual-level predicates showing the general properties of individuals. The ambiguous stage-/individual-level interpretations of the verbal complements of ai^3, according to the reviewer, could influence the functional changes of ai^3 and contribute to the change from the psych verb ai^3, which favors its verbal complements to be interpreted as individual-level predicates into the volitional verb ai^3, which favors verbal complements with stage-level readings.

modal indicating the speaker's directive force and the imposition made on the subject by the speaker (Lien 2013), as shown in (6). Moreover, according to Chang (2009:61), *ai*[3] can mark 'adverse future' of an upcoming event, i.e., to predict an undesirable future event, before the 19th century, as shown in (7).

(6)　　愛較細膩咧。　　　　　　　　　　　　　　　　[FS Xinshe 182.08]

ai^3　　khah^4　　se^3-ji^7　　leh^0

DEO more　　careful　PRT

'(You) should be more careful./take care of yourself.'

(7)　　啞公莫急，愛易老。　　　　　　　　　　　　　[JJ 14.246]

a^1-kong^1　　bok^8　　kip^4,　　**ai^3**　　i^2　　lo^2

DIM-master　NEG　　hurry　　**ASSU** easy　old

'Sir, don't be in such a hurry, otherwise you will get old easily.'

The use of *ai*[3] marking an 'adverse future' is assumed to have evolved from invited inference (Traugott & Dasher 2002:29) after what was desired to happen actually turns out to be an adverse incident—a situation that welcomes listeners to make inferences of meanings other than 'desire'. In that situation, "the sense of love is weakened, and the reading 'to have a tendency to' is strengthened" (Chang 2009:62). Two mechanisms are thought to have triggered the rise of the predictive use of *ai*[3], according to Chang (2009). One of these is metaphorization (Heine, Claudi & Hünnemeyer 1991), which explains the change of *ai*[3] from being a psych verb to expressing subjective prediction of an unrealized event. The other is metonymization (Traugott & Dasher 2002), which accounts for pragmatic strengthening of an unwanted future through the recurrence of an adverse outcome of an event (Chang 2009:66). Despite previous insights concerning distributions and diachronic facts of *ai*[3], the developmental paths and the triggering forces for those changes, specifically from the volitional *ai*[3] to the deontic modal *ai*[3], remain to be explored.

3. Research materials

For the purpose of this study, the tokens of *ai*[3] used here are collected from both historical and contemporary data.[14] The historical data are based on the playscripts of *Li Jing Ji* 'The Legend of Litchi Mirror' in its four editions, published throughout the 16th century to the 19th century and marked as JJ (in 1566), WL (in 1581), SZ (in

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[14] All materials used in this study are drawn from *The Corpus of Southern Min*, maintained by the Institute of Linguistics at National Tsing Hua University, courtesy of the coordinator Prof. Chinfa Lien.

1651), and GX (in 1884), according to the title of the emperor who ruled at the time of publication. [15] Contemporary SM data are drawn from the collection of *folk storybooks of Southern Min* (henceforth FS), recorded and edited by Prof. Wan-Chuan Hu and his colleagues, from towns and counties all over Taiwan at the end of the 20th century (Hu 1994a, 1994b, 1998, 2001-2004, Hu & Huang 1995, 1996a, 1996b, 1996c, Hu & Chen 1999, Hu & Wang 1999). Though the playscripts of *Li Jing Ji* reflect a mixed language variety of Quanzhou and Zhangzhou dialects used in Quanzhou (also known as Chinchew) in the province of Fukien, they are used for representing the diachronic facts of ai^3 due to the scarcity of faithful material written in SM in Taiwan before the 19th century.[16] The number of valid samples of ai^3 collected from the four editions of *Li Jing Ji* totals 324, and the number of instances of ai^3 in the collection of FS totals 1816.[17] All the samples have been carefully tagged according to their functions.

4. Distribution and development of ai^3 in SM

Compared to non-modal uses of ai^3, the nowadays predominant use of the deontic modal ai^3 appeared quite late in history. No tokens of deontic modal ai^3 can be found before the 20th century. Another latecomer is the intentional use of ai^3, which did not occur until the 17th century. In contrast, four functions of ai^3 remained to be used since the 16th century, including the psych verb ai^3, the volitional verb ai^3, ai^3 as a verb of necessity, and ai^3 expressing assumptive prediction. However, the frequency of the psych verb ai^3 and the assumptive ai^3 decreased significantly at the end of the 19th century, from 68% to 9% and from 8% to 1% respectively. By comparison, the newly-emerged deontic modal ai^3 showed a substantial increase from 0% to 55% by the end of the 20th century. It is also worth noting that the frequency of ai^3 as a verb of necessity grew from 0% to 9% at about the same time. On the whole, the first three significant uses of ai^3 in historical SM are the psych verb ai^3 (averaging 68%), the volitional verb ai^3 (averaging 21%), and the assumptive ai^3 (averaging 8%), whereas the most common use of ai^3 in contemporary SM is the deontic modal ai^3 (averaging 55%), followed by the volitional verb ai^3 (averaging 25.7%), and ai^3 as a verb of

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[15] Though the edition published in the year of 1566 is named *Li Jing Ji* 'The Legend of Litchi Mirror', all later editions are titled *Li Zhi Ji* 'The Legend of Litchi' despite their referring to the same stories.

[16] Personal interviews with people living in Xiamen City, which is located on an island near Fukien Province, show no significant differences between the uses of ai^3 in Taiwan and Xiamen.

[17] Those which are used for onomatopoeic functions, such as 愛个冷打丁 ai^3 e^0 $ling^3$ tah^4 $ting^1$ in the JJ edition, are regarded as invalid tokens and have been removed from the collection of data.

necessity (averaging 9%). Statistics regarding the functions of ai^3 shown in the examined historical and contemporary data of SM are listed in Table 1.[18]

Table 1. Frequency of all functions of ai^3 in historical and contemporary SM

	DEO	PSY	VOL	NEC	ASSU	INT	SUM
Historical text JJ (1566)	0	61	15	1	7	0	84
%	0%	73%	18%	1%	8%	0%	100%
Historical text WL (1581)	0	7	2	0	0	0	9
%	0%	78%	22%	0%	0%	0%	100%
Historical text SZ (1651)	0	72	23	0	10	2	108
%	0%	67%	21%	0%	9%	2%	100%
Historical text GX (1884)	0	80	27	0	9	7	123
%	0%	65%	22%	0%	7%	6%	100%
Historical total	0	220	67	1	26	9	324
Historical average %	0%	68%	21%	0.3%	8%	2.7%	100%
Contemporary FS (1994)	997	165	467	168	16	3	1816
Contemporary average %	55%	9%	25.7%	9%	1%	0.3%	100%
Average of each type %	46.5%	18%	25%	8%	2%	0.5%	100%
Sum of each type	997	385	527	170	42	12	2140

The first two frequent uses of ai^3 in modern SM, i.e., the deontic modal ai^3 and the volitional ai^3, are both agent-oriented and force-involved because their grammatical subjects serve as the responsible agents upon whom impositions are made in order for certain acts or events to come about. However, the agent-oriented property of the volitional verb ai^3 is not as equally straightforward as the deontic modal ai^3. For the deontic modal ai^3, the subject is imposed by forces external to the subject, while for the volitional verb ai^3, the grammatical subject can be regarded as under the effect of internal or reflexive forces for the reason that the embedded yet unexpressed subject of the volitional verb ai^3, which is the genuine imposition-taker, is co-referential with the grammatical subject, which makes the imposition. In other words, though the matrix and the embedded subjects of the volitional verb ai^3 refer to the same entity in the real world, they do interact with each other in respect to force as one of them being the imposition maker and the other the corresponding taker of the imposition.

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[18] The abbreviations used in the first row of the table are as follows: DEO: deontic modal; PSY: psych verb; VOL: volitional verb; NEC: verb of necessity; ASSU: assumptive certainty or assumptive prediction; INT: intentional verb; SUM: the sum of tokens.

In what follows I will show the general distributions of the above functions of ai^3 as a precursor to discussing the development of the deontic modal ai^3.

4.1 Psych verb ai^3 meaning 'love' or 'like'

Psych verbs "describe a psychological event or state" (Roberts 2007:151). For example, in the sentence, *John loves dogs*, *John* has the role of Experiencer, and *dogs* is what the psychological state is related to, i.e., the Theme. The psych verb ai^3 'love' was the most prominent use of ai^3 in *Li Jing Ji,* and it allowed generic and non-specific nominal, verbal, or clausal complements. The uses of the psych verb ai^3 with all the above complements in early SM are shown in (8a-c) respectively:

(8) a. 你向愛錢。   [JJ 14.311]

     li^2 siong^7 **ai^3**   tsinn^5

     2SG   DG   **like**   money

     'Money is first in your affections.'

   b. 我愛食乳汁。   [SZ 5.055]

     gua^2 **ai^3**   tsiah^8 ling^1- tsiap^8

     1SG   **like**   eat   milk

     'I like to drink milk.'

   c. 你向愛人笑。   [SZ 17.201]

     li^2 siong^7 **ai^3**   lang^5 tshio^3

     2SG   DG   **like**   people   smile

     'You love to see others smile.'

In contemporary SM, however, the psych verb ai^3, which remains the tendency of taking stative or generic complements, tolerates either nominal or verbal complements (Lien 2013), but not clausal complements, in affirmative sentences. This might have been resulted from a competition between the psych verb ai^3, which favors stative interpretations, and the intentional verb ai^3, which prefers stage-level interpretations, though both of them can express the sense of preference. Since clausal complements tend to be eventive and trigger stage-level interpretations, they are more likely to be used with the intentional verb ai^3 in unmarked contexts, such as affirmative sentences. In negative contexts, however, the psych verb ai^3 with clausal complements can then survive because the negated psych verb ai^3 and the negated intentional verb ai^3 can be incorporated as they agree in referring to unwanted or disliked situations despite potential differences in complement interpretation. Modern uses of the psych verb ai^3 with nominal and verbal complements are shown in (9a) and (9b) respectively:

(9) a. 就是講干若大姐愛小妹安呢。 [FS Daan 126.25]

to⁷-si⁷	kong²	kan¹-na²	tua⁷-tsi²	**ai³**	sio²-mue⁷	an²-ne¹
CONN	say	like	big.sister	**love**	little.sister	sort.of

'Like the way an older sister loves her younger sister.'

b. 伊足愛坐甕啦。 [FS Tainan 96.06]

i¹	tsiok⁴	**ai³**	tse⁷	ang³	lah⁰
3SG	DG	**love**	sit	urn	PRT

'He likes to sit on the urn.'

The preference to stative and individual readings of complements explains why the psych verb *ai*³ frequently occurs with degree modifiers, as shown in (8a), (8c), and (9b). Moreover, since individual readings are often elicited from general and habitual events, the psych verb *ai*³ can also carry habitual meaning, as illustrated in (10a), which can be further extended to mean 'have a tendency to', as shown in (10b).

(10) a. 這囝仔就擱愛予人成。 [FS Zhanghua 32.05]

tse¹	gin²-a²	to⁷	koh⁸	**ai³**	hoo⁷	lang⁵	siann⁵
this	kid-DIM	CONN	again	**like**	PASS	person	coax

'What is more, this kid is easy to coax.'

b. 逐个人攏足愛睏。 [FS Tainan 110.13]

tak⁴-e⁷	lang⁵	long²	tsiok⁸	**ai³**	khun³
every-CL	person	all	DG	**tend**	sleepy

'Everyone is sleepy.'

4.2 Volitional verb *ai*³ meaning 'want' or 'desire'

The core sense of the volitional verb *ai*³ is 'want' or 'desire'. Since volition is itself a kind of performative force according to Searle (1983:30), the volitional verb *ai*³ differs from the psych verb *ai*³ as it has semantic force in its meaning components. Therefore, *I want something* implies *I want I have something* while *I love something* does not trigger such kind of reading. In this sense, the complement of the volitional verb *ai*³ remains as a clause taking a subject which is referentially controlled by the grammatical subject of the volitional verb *ai*³. Therefore, both *I want something* and *I want to do something* bear the same underlying semantic structure, *I want I have/do something*, in which the one who desires and the one who is responsible for that are

identical. Examples of the volitional ai^3 from *Li Jing Ji* are shown in (11a) and (11b), of which (11a) has a nominal complement and (11b) a verbal complement:[19]

(11) a. 別人我不愛，那愛益春。   [SZ 30.131]

pat⁴	lang⁵	gua²	bu²	**ai³**,	na²	**ai³**	ik⁸-tshun¹
other	people	1SG	NEG	**want**	only	**want**	Ik-Tshun

'I don't want other women. The only woman I want is Ik-Tshun.'

  b. 愛看伸手來提去看。   [JJ 26.379]

ai³	khuann³	tshun¹-tshiu²	lai⁵	the⁵-khi³	khuann³
want	see	stretch-hand	CONN	take-go	see

'(If you) want to see it, put out your hand and take it.'

In contemporary SM, the volitional verb ai^3 also allows either nominal or verbal complements, as shown in (12a) and (12b):[20]

(12) a. 安呢啦，我愛一个雞嫩仔。   [FS Tainan 174.19]

an²-ne¹	lah⁰,	gua²	**ai³**	tsit⁴-e⁷	ke¹-nua⁷-a²
this	PRT	1SG	**want**	one-CL	chicken-testis-DIM

'Okay, I would like to have one chicken testis.'

  b. 看你愛食啥盡量買。   [FS Tainan 132.22]

khuann³	li²	**ai³**	tsiah⁸	siann²	tsin⁷-liong⁷	bue²
see	2SG	**want**	eat	what	to.a.great.extent	buy

'See what you like and buy as many as you want.'

In contemporary SM, the volitional ai^3 often combines with beh^4, which is also a volitional verb, to generate complex forms, such as beh^4-ai^3 or ai^3-beh^4. Specifically, the frequently used complex beh^4-ai^3 in contemporary SM often combines with nominal complements.[21] This implies that the complex beh^4-ai^3 might still be lexical and structurally lower than the other complex ai^3-beh^4. Data from historical SM also

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[19] Though it seems perfectly plausible for ai^3 to have the meaning of 'love' instead of expressing the volitional 'want', here in (11a) the verb ai^3 can only be interpreted as a volitional verb meaning 'want' showing stage-level desire since the context is concerned about the speaker's refusal to be rewarded with another female as his wife, yet he insisted that Ik-Tshun should marry him as his reward.

[20] The verb ai^3 with directive force and taking clausal complements would be defined as an intentional ai^3 rather than a volitional ai^3 since the force has impact on the subject of the embedded clause, which is non-coreferential with the matrix subject and is responsible for the intention to be accomplished.

[21] Of all the 49 tokens of compounds of ai^3 and beh^4, only 11 tokens are represented as ai^3-beh^4, and all of them select VP as their complements. The other 38 tokens are beh^4-ai^3, of which 32 take nominal complements (including the construction 'beh^4-ai^3 + NP + purposive phrase', such as beh^4-ai^3 i^1 tso^3 boo^2 'want her to be my wife', which indicates the desire of possessing the NP).

suggest a relatively higher structural position of ai^3-beh^4 since it takes only verbal or clausal complements, as shown in (13a) and (13b), instead of nominal complements.

(13) a. 今愛卜辭哥嫂。   [JJ 12.031]

   kin^1 **ai^3-beh^4**   si^5 ko^1-so^2

   now   **want**   farewell   brother and sister-in-law

   'Now (I) want to say farewell to (you, my) brother and sister-in-law.'

   b. 愛卜三人共一心。   [SZ 19.165]

   ai^3-beh^4   san^1 lang^5 kang^7 tsit^4 sim^1

   want   three   people   same   one   heart

   '(I) want the three (of us) to be harmonious.'

That beh^4-ai^3 favors nominal complements suggests that beh^4-ai^3 is a disyllabified variety of the verbs beh^4 or ai^3. In contrast, since ai^3-beh^4 prefers verbal complements and can express a sense of imminence (Langacker 1990), it is likely to have been grammaticalized as a modal or auxiliary (Chang 2009:68-69). While it appears that beh^4 meaning 'want' or 'desire' has developed the function of a volitive modal, the volitional ai^3 with similar meanings remains as a lexical verb.[22] When ai^3 is used as a modal, it can only be deontic or even more functionalized, but not as dynamic as beh^4.

4.3 Ai^3 as an intentional verb

Though only 9 tokens of the intentional verb ai^3 are found in historical SM, the occurrence of the intentional ai^3 in the 17th century validates the cline from subject's 'desire' to speaker's 'intention' (Coates 1983:170-177, Bybee, Perkins & Pagliuca 1994:256). What differentiates the intentional ai^3 from the volitional ai^3 is the referential behavior of the responsible agent upon whom the force of imposition is exerted. A sentence which takes the intentional ai^3 as its main verb possesses non-coreferential matrix and embedded agentive subjects, whereas the clausal complement of the volitional ai^3 takes a subject which is co-referential with the matrix one. In other words, though the embedded yet unexpressed subject of the volitional ai^3 is identical in reference with the matrix subject, i.e., being *coindexed* with the matrix subject, the matrix and the embedded subjects of the intentional verb ai^3 are in most cases distinctive from each other. Since one of the coindexed items can be skipped for

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[22] In spite of the development of beh^4 as a volitive modal, beh^4 can still be used as a volitional verb taking a nominal complement, though it is much more common for beh^4 to take verbal complements.

simplicity,[23] it appears that the volitional verb ai^3 takes only verbal complements, while the intentional verb ai^3 takes a full clause as its complement, in which the non-coreferential and distinctive agentive arguments can all be explicitly specified.

Following Searle, intentions have directive force, since an intention can be satisfied "if the action represented by the content of the intention is actually performed" (Searle 1983:79). Since directive expressions tend to occur in immediate speech contexts, it is expected that the intentional ai^3 occurs more frequently with the first and the second person pronouns. An example in *Li Jing Ji* is shown in (14).

(14)　我愛汝走返阮鄉里。　　　　　　　　　　　　　　[KX 28.036]

gua^2　**ai^3**　li^2　$tsau^2$-$huan^2$　$guan^2$　$hiunn^1$-li^2

1SG　　INT　2SG　go.back　　2.POSS　home.town

'I want you to go back to my home town.'

Based on the FS data, the occurrence of the intentional ai^3 drops to less than 1% in contemporary SM. Contemporary use of the intentional ai^3 is shown in (15):

(15)　*伊…就一定愛這个少年家來共(伊)娶。*　　　　　[FS Xinshe 56.19]

i^1　to^7　it^1-$ting^7$　**ai^3**　$tsit^4$-e^5　$siau^3lian^5$-ke^1　lai^5　ka^7　(i^1)　$tshua^7$

3SG　CONN　insist　INT　this-CL　young.man　　CONN　DAT　3SG　marry

'She insisted on having this young man marry her.'

The reduction of the use of the intentional ai^3 can be attributed to the competition between the intentional ai^3 and the modern flourishing use of the deontic modal ai^3, both of which are related to the sense of imposition and are interchangeable if the structures of the sentences they are in allow such kind of alternation. For example, when the embedded subject in (15) is profiled and raised to take over the position of the matrix subject, by which the original subject is demoted and unexpressed in the predication, a sentence with obligative modal ai^3 emerges. The intentional ai^3 and the obligative ai^3 thus contrast in how the force of imposition works. For the intentional ai^3, the force works between the matrix and the embedded subjects, whereas for the deontic modal ai^3, the imposition is made by a demoted and unexpressed causer, who is in most cases the speaker in the context. What interests us is that the imposition,

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[23] Following transformational grammar (e.g., Emonds 1976), the structure of the clausal complements of the volitional ai^3 is influenced by the effect of equi-NP deletion, which elides co-indexed NPs within a referential domain. In contrast, the deletion rule does not apply to the clausal complements of the intentional ai^3 since they contain no NP which is co-referential with arguments in the matrix sentence. It follows that the preferred structure of the volitional ai^3 is [NP$_i$ ai^3 ~~NP$_i$~~ VP], while the canonical structure of the intentional ai^3 is [NP$_i$ ai^3 NP$_j$ VP]. The cross-out line above indicates equi-NP deletion.

which is made upon the original embedded subject, remains the same, though the function of ai^3 changes. The shared force-interactional relationships between the intentional ai^3 and the deontic modal ai^3 are assumed to not only give rise to the use of the deontic modal ai^3 in the history of SM, but also inspire synchronic optional shift between the intentional verb ai^3 and the deontic modal ai^3 in contemporary SM. An example of such kind of optional alternation is shown in (16), if compared to (14):

(16)　你今也愛共我顧予好。　　　　　　　　　　　　[FS Luo&Chen 50.01]
　　　li^2　　kin^1　　ia^7　　**ai^3**　ka^7　　gua^2　　koo^3　　hoo^7　　ho^2
　　　2SG　　now　　also　　**DEO**　DAT　　1SG　　care　　LIN　　well
　　　'Now you have to take good care of it for me.'

The comparison between (14) and (16) suggests that the intentional ai^3 and the deontic ai^3 both involve force-interactional relationships, though their grammatical distributions differ. It is likely that such similarity builds up a shared basis between the two functions of ai^3 and enables the intentional verb ai^3 to change into the deontic modal ai^3 without giving up the sense of imposition even when the causer has become demoted and disappeared from the predication during the change.

4.4 *Ai^3* expressing assumptive prediction

Though it appears that most of the earlier senses of ai^3 are lexical and interpreted on the event level, ai^3 did serve grammaticalized functions and express assumptive prediction quite early in history. A marker of assumptive prediction differs from a pure device of futurity, such as *beh*^{4}, in that the former emphasizes a speaker's belief in a future event (Bybee, Perkins & Pagliuca 1994:248) and a subjective reasonable induction to get such a prediction (Palmer 2001:25-29). However, the assumptive ai^3 is also different from a typical epistemic modal for the reason that a speaker employing the epistemic modal generally believes the prediction will come true when they use an assumptive modal, whereas a speaker employing the assumptive ai^3 knows that what they predict might never come to pass. In most cases, the assumptive ai^3 serves to warn or to prohibit rather than to simply give subjective assertions. In this sense, the assumptive ai^3 functions like a discourse marker in a rather restricted context, i.e., predicting an adverse future (Chang 2009:62) to warn or prohibit others from doing something disadvantageous or unfavorable. The earliest case of an assumptive ai^3, which was used for predicting adverse events that were unfavorable to someone, is found in the JJ edition of *Li Jing Ji* (about the 16th century). Examples of the assumptive ai^3 in *Li Jing Ji* are shown in (7) and (17):

(17) 明旦頭上孫愛勿飼得。   [GX 8.091]

bing⁵-tan²   thau⁵-tsiunn⁷-sun¹   **ai³**   be⁷-tshi⁷-tit⁴

afterwards   first-born-grandson   **ASSU**   NEG-feed-M

'In the days to come your first-born grandson will die.'

Being used for predicting adverse events seemingly contradicts the original sense of *ai³* as 'love' or 'desire'. According to Chang (2009), adverse prediction comes from a strengthened sense of 'tendency' through invited inference (Traugott & Dasher 2002:29) based on the recurrence of adverse incidents that weakens the sense of love and gives rise to the sense of future.

A speaker's subjective attitude can sometimes be quite vicious, as exemplified in (18), which shows the speaker's malicious prediction of the subject's misfortune. Note that the referent of the subject in (18) is not a human, but a tree, which is less likely to be used with the deontic modal *ai³* or the intentional *ai³* because it cannot take moral responsibilities for future events.

(18) 你愛死過年。   [FS Yunlin 10.09]

li¹   **ai³**   si²   kue³-ni⁵

2SG   **ASSU**   die   pass.new.year

'(Bead tree), you will die when the new year comes.'

Example (18) also shows why the assumptive *ai³* is not a typical epistemic modal. Epistemic modals are based on speakers' prior experiences or logical inductions, and are supposed to be true, at least as far as the speaker believes. In contrast, the assumptive *ai³* carries discourse functions such as warning and threatening, hence need not to be judged as true or false. It happens that what the speaker predicts turns out to be untrue. As shown in (19), the one who dreams about being foretold of immediate death by God remains alive in the real world:

(19) 仙公共我講『食飽愛等死』。   [FS Yilan 56.15]

sian¹-kong¹   ka⁷   gua²   kong³   tsiah⁸-pa²   **ai³**   tan²-si²

god   to   1SG   say   eat.full   **ASSU**   wait.die

'(After I asked him how long I would live,) the god told me, "You must die after you finish this meal."'

It is worth noting that when the subject of the assumptive *ai³* is absent from the sentence, the function of *ai³* becomes ambiguous. In one way, *ai³* can be interpreted as expressing an assumptive prediction; while on the other, *ai³* can simply be treated as a

deontic modal. Such ambiguity might provide an explanation for the existence of the adverse meaning of the assumptive ai^3. Similar to the subject of the deontic modal ai^3, the subject of the assumptive ai^3 is the target upon which the speaker imposes. The difference between them is that the subject of the deontic modal ai^3 also serves as a responsible agent for an upcoming event, while the subject of the assumptive ai^3 does not carry such kind of responsibility. This explains why inanimate subjects, such as the subject 'bead tree' in (18), appear in sentences with the assumptive ai^3. In other words, though both the deontic modal ai^3 and the assumptive ai^3 have a speaker who makes impositions, only the deontic modal ai^3 has force interactions between the speaker and the responsible agent, shown as a subject. The force of the assumptive ai^3 is thus weaker and can only serve discourse functions. It follows that if the hearer refuses to take the speaker's force, the act that the assumptive ai^3 performs crashes, and the force itself would turn to be of no use at all (Thomas 1995:196).

4.5 Ai^3 as a verb of necessity

Only one case of the necessity ai^3 is found in *Li Jing Ji*, as shown in (20):

(20)　論仔兒須識禮義，治家法各愛尊卑。 　　　　　　　　　　　　[JJ 14.291]

lun^3	$kiann^2$-ji^5	su^1	sik^4	le^2-gi^7,
teach	child	need	know	manners-loyalty
ti^7	ke^1-$huat^4$	kok^4	**ai^3**	$tsun^1$-pi^1
rule	family-regulation	each	**need**	hierarchy

'To educate a child to have manners and loyalty, and to discipline the family in accordance with the hierarchy of seniority.'

Though only few cases of the necessity ai^3 can be found in historical SM, the use of the necessity ai^3 increases greatly in contemporary SM. Investigation into the FS shows that it is common for the necessity ai^3 to occur in conditional constructions such as ai^3…$tsiah^4$ (-e^7)… 'Only with…can certain events be carried out' and na^7 (-beh^4)…ai^3… 'If (want)…then something is needed or it is necessary to do…' to represent the required conditions of certain purposes. Examples of the necessity ai^3 used with the two kinds of conditional constructions are shown in (21a) and (21b).

(21) a. 愛一擔水轉來才有通洗身軀。   [FS Daan 38.13]

          ai³   tsit⁴-tann¹   tsui²   tng²-lai⁵   tsiah⁴   u⁷-thang¹

          need   one-CL   water   turn.back   CONN   can

          se²   sin¹-khu¹

          wash   body

          'It requires two buckets of water fetched (for us) to shower.'

    b. 咱人卜好著猶然愛有一个福份。   [FS Miaoli 58.107]

          lan² lang⁵ beh⁴ hoo² to⁷   iu¹-guan⁵ **ai³** u⁷ tsit⁴-e⁷ hok⁸-hun⁷

          1PL people want well CONN still   **need** EXT one-CL fortune

          'Those who want to lead a good life need to possess a fortune.'

In contemporary SM, the necessity ai^3 often combines with another verb of necessity $tioh^8$ to make a complex form of necessity $tioh^8$-ai^3, as shown in (22):

(22) 彼个查某著愛有夠巧才有法度選人。   [FS Yunlin 102.01]

       hit⁴-e⁵   tsa¹-boo²   **tioh⁸-ai³** u⁷-kau³   khiau²

       that-CL   woman   **need**   enough   smart

       tsiah⁴   u⁷-huat⁴-too⁷   suan²   lang⁵

       CONN   have-method   choose person

       'Having intelligence is necessary for the woman to determine the candidates.'

       Lit. 'If the woman is not smart, she cannot judge which ones to select.'

Ai^3 resembles $tioh^8$ in that in contemporary SM they can both serve as verbs of necessity and deontic modals. This might not just be a coincidence; instead, it implies an affinity between necessity and obligation and a possible evolutionary path from one to the other. Examples of the deontic ai^3 will be provided in the next section.

4.6 Ai^3 as an obligative modal

While no obligative modal ai^3 is seen in historical SM, it is the most frequently used function in contemporary SM. A great number of examples of obligative ai^3 are found in *Go-en*, a periodical published from 1895 to 1945 in SM with Japanese translations. Similar to the volitional ai^3, which can combine with beh^4 to generate the complex volitional beh^4-ai^3, the obligative modal ai^3 can also combine with another obligative modal $tioh^8$ to make a complex modal $tioh^8$-ai^3, as shown in (23a).[24]

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[24] There is an asymmetry between the two possibilities of complex modals made up of ai^3 and $tioh^8$. Though the cases of $tioh^8$-ai^3 number over 300 tokens in FS, only one case of ai^3-$tioh^8$ can be found. The combination of ai^3 and $tioh^8$ seems to occur quite late in history, at least as late as the 19th century,

(23)   a. 你著愛想辦法啊！   [FS Shalu 120.16]

   li^2 **tioh^8-ai^3**   siunn^7 pan^7-huat^4 ah^0

   2SG   **DEO**   think   solution   PRT

   'You should figure out how to deal with it!'

   b. 我愛有孝阮老母才著。   [FS Shigan 46.12]

   gua^2 **ai^3**   iu^2-hau^3 guan^2 lau^7-bu^2 tsiah^4 tioh^8

   1SG   **DEO**   filial   1SG.POSS   DIM-mother   just   right

   'I should devote myself to my mother with filial piety.'

(23)   c. 你有聽 e^0 無？你著記 e^0 啦!   [FS Tainan 194.11]

   li^2 u^7 thiann^1-e^0 bo^5 ?   li^2 **tioh^8**   ki^3-e^0 lah^0

   2SG   have   hear-ASP   NEG   2SG   **DEO**   keep.in.mind   PRT

   'Have you heard what I said? You should keep it in mind!'

Though both *ai^3* and *tioh^8* can be used as deontic modals, they contrast in their force of speech. Originating from an expression of love, the obligative *ai^3* implies a speaker's empathy and low level of coercion. Therefore, in cases of the deontic modal *ai^3* with a non-first-person pronoun as the subject, as shown in (6), the speaker is likely to feel concern about the person who should be more careful. Similarly, when the deontic modal *ai^3* has the first person pronoun as its subject, as exemplified in (23b), the speaker tends to agree with the obligation he himself takes. In contrast, the imposition given by *tioh^8* in (23c) is more obliging and is without a sense of love. Due to the consideration of politeness in communication (Leech 1983), the lack of a sense of love or being unable to express speaker's empathy in the use of the deontic modal *tioh^8* then makes the deontic modal *tioh^8* an unfavorable choice if compared to the deontic modal *ai^3* or the compound modal made up with both *tioh^8* and *ai^3*.

The intentional verb *ai^3* may give rise to the deontic use of *ai^3* since there exist potential alternations between the intentional verb *ai^3* and the deontic modal *ai^3*, as shown in examples (14) and (16), based on the shared force-interactional structures in their semantic components. Though the number of tokens of the intentional verb *ai^3* found in historical or contemporary SM is not remarkable, the existence of the intentional function is helpful to the rise of the deontic modals by preparing a force-involved semantic common ground for the change to occur. An even better environment for deontic modals to emerge is when the intentional *ai^3* appears in an immediate speech context, which is favored by discourse-oriented deontic modals

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because neither *tioh^8-ai^3* nor *ai^3-tioh^8* can be found in *Li Jing Ji*. The absence of compounds of *ai^3* and *tioh^8* can be attributed to the late emergence of senses of modality for both *ai^3* and *tioh^8*.

(Palmer 1990), such as the context in (14). The intentional ai^3 hence makes itself an appropriate source of the deontic modal ai^3.

The close relationship between the intentional verb ai^3 and the deontic modal ai^3 is demonstrated with the comparison between (24b) and (24c). Though (24b) involves the subject's intentional force expressed by a causative verb, ai^3 is used as a deontic modal, rather than as an intentional verb, to specify the obligation that the embedded subject i^1 'her' is forced to take. The parallel interpretations between (24b), which has a deontic modal ai^3, and (24c), which by contrast takes an intentional verb ai^3, thus prove the close relationship between the intentional ai^3 and the deontic modal ai^3.

(24)   a. 我叫阮翁去買啊!   [FS Xinshe 168.16]

gua^2	$\mathbf{kio^3}$	$guan^2$	ang^1	khi^3	bue^2	ah^0
1SG	**CAU**	1SG.POSS	husband	go	buy	PRT

'I sent my husband to buy (sour food for me).'

b. 個老父就叫伊講愛拋繡球。   [FS Shigang 88.15]

in^1	lau^7-pe^7	to^7	$\mathbf{kio^3}$	i^1	$kong^2$
3SG.POSS	DIM-father	CONN	**CAU**	3SG	say

$\mathbf{ai^3}$	$phau^1$	siu^3-kiu^5
DEO	throw	silk.ball

'So her father wanted her to throw the silk ball.'

c. 個老父就愛伊拋繡球。   [simulated sentence]

in^1	lau^7-pe^7	to^7	$\mathbf{ai^3}$	i^1	$phau^1$	siu^3-kiu^5
3SG.POSS	DIM-father	CONN	**INT**	3SG	throw	silk.ball

'So her father wanted her to throw the silk ball.'

The verb kio^3 'call' in (24b) is a general causative marker in SM, which can by itself express causative meanings, as shown in (24a). The intentional verb ai^3 can also serve to express causation by means of representing the subject's coercive intention, as shown in (24c). It follows that the deontic modal ai^3 in (24b) only serves to specify the impact of the force interaction on the embedded subject since the causative verb kio^3 has already taken over the causative function. In other words, the deontic modal ai^3 has weaker coercive force than the intentional ai^3. That deontic modal ai^3 is weaker in force can then account for its being less obliging and more 'reserved' than causative-type verbs (Traugott 1995:49) such as the intentional verb ai^3. Therefore, it is more likely for the deontic modal ai^3 to be adopted when it comes to expressing force-involved interactions. The reduction of causation throughout the change from the intentional ai^3 to the deontic modal ai^3 also suggests that the causer of the intentional ai^3 might be demoted, and subjectification is one of the most common

processes which bring about such kind of demotion. In the next section I will demonstrate how the deontic modal ai^3 emerges from the intentional ai^3 through the process of subjectification.

5. Deriving deontic modals from volitional verbs

A general functional development of volitional verbs meaning 'desire' or 'want' is to change from expressing intentions, to the mark of future, and eventually to performing acts such as imperatives, as shown in Figure 3 (Bybee, Perkins & Pagliuca 1994:240):[25]
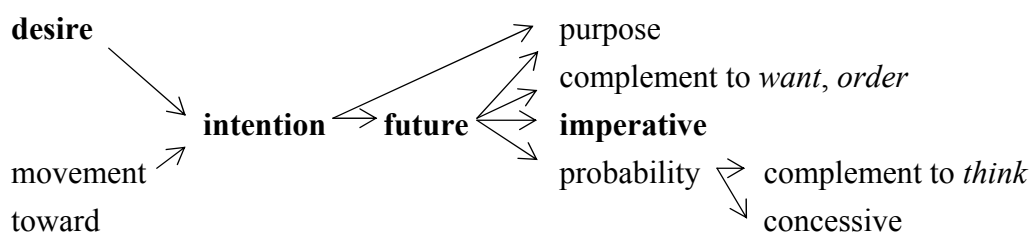
Figure 3. The path of development from *desire* to *imperative*

The development of the deontic modal ai^3 partly conforms to this cline, and their identical stages have been boldfaced in Figure 3. Along with the change of ai^3 from having the desire of something to showing the intention of certain acts or events, the strength of the indicative force of ai^3 increases. This change is in accordance with Tendency II that Traugott proposes, as already provided in (3), which describes the tendency for mental verbs based in internal situations to change into speech act verbs which involve contextual conditions created by someone other than the agent himself (Traugott 1989:34-35). However, though Figure 3 can illustrate the development of ai^3 from being volitional to intentional and assumptive, it is of little help to explain the change from the intentional verb ai^3 to the deontic modal ai^3, which involves subjectification, since deontic modals are discourse-oriented and are reliant on the speakers to make impositions and conditions (Palmer 1974:103). Understanding how subjectification took place in the emergence of the deontic ai^3 is then essential for building up the path of development from the intentional ai^3 to the deontic modal ai^3.

Subjectification is assumed to operate in more than one dimension. It involves several separate processes of gradual change, each of which might also correlate with others. The multi-dimensional continua are shown in Figure 4 (Traugott 1995:47-48).

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[25] The stage of *future* shown in Figure 3 not only refers to simple future markers, but also includes the uses of assumptive futuritive expressions or subjective predictions (Bybee, Perkins & Pagliuca 1994:208). Thus it is inclusive of the assumptive function of ai^3.

(a)	Propositional function	$\longrightarrow$	Discourse function
(b)	Objective meaning	$\longrightarrow$	Subjective meaning
(c)	Non-epistemic modality	$\longrightarrow$	Epistemic modality
(d)	Non-syntactic subject	$\longrightarrow$	Syntactic subject
(e)	Syntactic subject	$\longrightarrow$	Speaking subject
(f)	Full, free form	$\longrightarrow$	Bounded form

Figure 4. The multi-dimensional continua of diachronic subjectification

Continuum (e), which indicates the change of a syntactic subject to a speaker within a particular context, helps to explain the movement of the syntactic subject to a discourse position during the evolution from an intentional verb to a deontic modal. When the position of a syntactic subject is left empty after such kind of change, a non-syntactic subject can then be profiled and promoted to the subject position based on continuum (d). Continua (d) and (e) thus collectively represent the change from the intentional verb ai^3 to the deontic modal ai^3. This change is shown in Figure 5.[26]

a.	in^1	lau^7-pe^7	**ai^3**	$\underline{i}^1$	$phau^1$	siu^3-kiu^5
intentional *ai^3*	3SG.POSS	DIM-father	**INT**	3SG	throw	silk.ball
	'Her father wanted her to throw the silk ball.'					

continuum (d) ⬇

b.	in^1	lau^7-pe^7	kio^3	$\underline{i}^1$	**ai^3**	$phau^1$ siu^3-kiu^5
deontic *ai^3*	3SG.POSS	DIM-father	CAU	3SG	**DEO**	throw silk.ball
with a causer	'Her father wanted her to throw the silk ball.'					

continuum (e) ⬇

c.	$\underline{i}^1$	**ai^3**	$phau^1$	siu^3-kiu^5
deontic *ai^3*	3SG	**DEO**	throw	silk.ball
without a causer	'She should throw the silk ball.'			

Figure 5. A change from the intentional verb *ai^3* to the deontic modal *ai^3*

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[26] Note that the existence of Figure (5b) does not imply a feeding relationship between structures in Figure (5b) and Figure (5c). Rather, Figure (5b) serves to be explanatory of the change from Figure (5a) to Figure (5c) by illustrating what might happen to the original arguments of the intentional ai^3 along with the change that continua (d) and (e) in Figure 4 predict. The sudden increase of the use of the deontic ai^3 in contemporary SM, shown in Table 1, in fact suggests that it is more likely that continua (d) and (e) in Figure 5 applied simultaneously as the intentional ai^3 changed to the deontic modal ai^3 without any intermediate stages. Moreover, the causative structure in Figure (5b) is by itself quite restricted and might under-predict the contexts in which the wide-spread change occurred.

As shown in Figure 5, the types of subjectification are specified in square boxes, while the arrows indicate the direction of change. Between Figure (5a) and Figure (5c) there is an optional stage in Figure (5b) which introduces an additional causative verb kio^3 to serve causative function as well as to license the representation of the causer. From Figure (5a) to Figure (5b) the single-underlined patient of the intentional ai^3, i.e., i 'her', moves to the left of ai^3 and triggers ai^3 to cast aside its original causative function, which can then be taken over by other causative verbs, such as kio^3. If instead no causative verb appears during the above change, the outcome would be like the structure shown in Figure (5c). A comparison between Figure (5b) and Figure (5c) shows that the original syntactic subject of the intentional ai^3 can only survive when there exists an intervening causative verb, which implies that the change from the intentional ai^3 to the deontic ai^3 must involve demoting the original subject of the intentional ai^3. The demoted syntactic subject then moves to the context of ai^3 to serve the function of a speaking subject as what the continuum (e) predicts.

Given that both volitional and intentional expressions involve directive force and are developmentally related (Searle 1983, Bybee, Perkins & Pagliuca 1994), as Figure 3 shows, Figure 5 thus provides the missing parts of the development cline from the volitional ai^3 to the deontic modal ai^3. Throughout the change, the force interaction between the causer and the causee of the imposition remains intact, though the causer was demoted and became reliant on the context for identification by the time when the deontic modal ai^3 emerged, accompanied by the reduction of the causative functions.

Continuum (e) involves the deletion of arguments from the predication, which might be reminiscent of a process of bleaching or loss in grammaticalization (Givón 1979, Langacker 1990) as the quantity of arguments decreases in the process of change. However, continuum (e) need not to be seen as a kind of bleaching since the loss of lexical items in stage C, Figure 5, forms stronger affinity between the subject of the deontic modal and the speaker, which is external to the subject. This exemplifies the increasing expressivity under the condition when certain pragmatic properties are reduced from the predication (Lehmann 1985, Brinton 1988, Bybee 1990). For the case of emerging deontic modal ai^3, pragmatic expressivity increased when the imposition-making authority of premodals originally within the predication was subjectivized to be the speaker that is within the context, as shown in Figure (1a).

Two fundamental properties of deontic modals are a sense of necessity and the interaction of force, both of which were obtained quite early in the history of the deontic modal ai^3 as the volitional verb ai^3 and the intentional verb ai^3 both have force interactions in their basic sematic components. However, unlike the volitional verb ai^3, which features intrapsychological interactions, the intentional verb ai^3 and the deontic modal ai^3 have their force applied in an interpsychological domain (Sweetser

1990:59-61, Talmy 2000). Though the domain of application differs, their shared force-dynamic structure enables their mutual alternations. The shared force-dynamic structure among the volitional ai^3, the intentional ai^3 and the deontic ai^3 is shown in Figure 6.
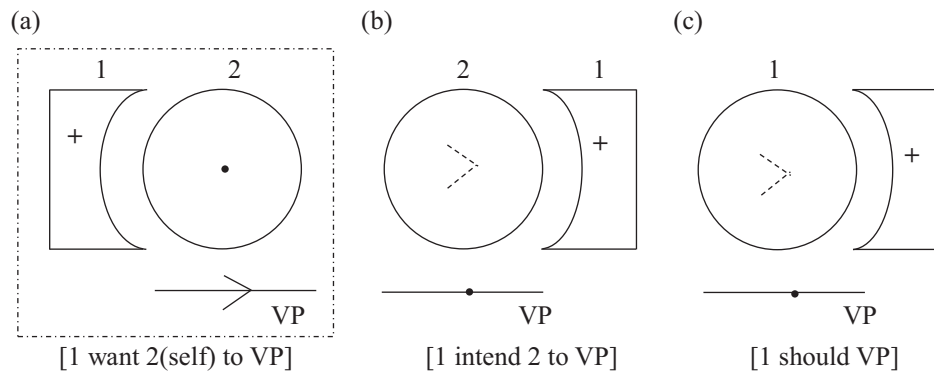
Figure 6. Force-dynamic patterns of (self-exerted) *want*, *intend*, and *should* (revised from Talmy 2000:430, 447)

The box of dotted lines in Figure (6a) is symbolic of the boundary of a single psyche, which features the force interactions of a volitional verb, and is distinguished from the other two kinds of interactions. Being within a single psyche, the participants of the force interaction in Figure (6a) are identical in referential properties, with each of them being part of the divided self (Talmy 2000:431). If the boundary disappears, as shown in Figures (6b) and (6c), the interaction of force turns to be applied in the interpsychological domain, and the participants of the force interaction become different individuals. Finally, if the patient of the force interaction is profiled, it generates Figure (6c), in which only one of the two participants of force is represented in the surface representation. It follows that though something is missing from the basic semantic relationships, the force interaction can remain intact and continue to influence the interpretation of the sentence.
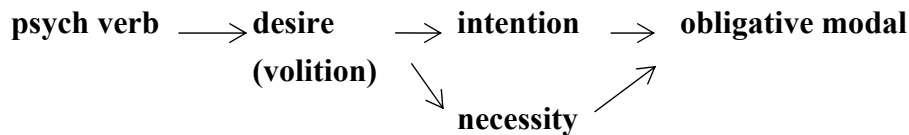
In this section, the motivations and the stages of the change of ai^3 from volitional verb to deontic modal are given in detail to show the significance of subjectification and consistent force-dynamic patterns in the process of change. It is suggested that premodals, such as the volitional ai^3 or the intentional ai^3, already had semantic force interactions that were crucial to the rise of deontic modality. The force remains at work even when one of the participants disappeared from the surface representation due to the speaker's involvement. It was the speaker's increasing involvement in the force interaction that enabled the deontic modal ai^3 to emerge from the intentional ai^3.

6. Concluding remarks

The purpose of this study is to validate the significance of subjectification in the development of deontic modals. While previous studies on the emergence of modals often lay stress on the effects of subjectification in the evolution of epistemic modals (e.g. Traugott & Dasher 1987, Sweetser 1990), this work explores the emergence of deontic modals under the effect of subjectification.

To ensure that subjectification applies successfully in the emergence of deontic modals without losing the sense of imposition, the persistence of force interactions is especially important since it builds a stable basis on which the change can apply. The force of deontic modals is acquired when modals are still premodals (Traugott 1989:38), and it continues to work throughout the process of emerging modals, though the domains of application may differ. The interaction of force applies in the intrapsychological domain for volitional verbs, in the interpsychological domain for intentional verbs, causative verbs, or deontic modals (Talmy 2000), and in the psychological domain for epistemic modals (Sweetser 1990:49). The consistency of force interactions among volitional verbs, intentional verbs, and deontic modals thus builds a solid basis for them to change from one to another without altering the force interacting relationships. This accounts for the preservation of the force of imposition on the subject of the deontic modal ai^3 even when the imposer was removed from the sentence through the process of subjectification during the change from the intentional verb ai^3 to the deontic modal ai^3. As a consequence, subjectification can apply to help give rise to the deontic modal ai^3 without losing the original sense of imposition.

Based on previous studies of the development or distribution of ai^3 in SM (Chang 2009, Lien 2013), this paper further explores the evolutionary paths of the deontic modal ai^3 by means of investigating two sources of material, i.e., *Li Jing Ji* 'The Legend of Litchi Mirror' published throughout the 16th century to the 19th centuries and *folk storybooks of Southern Min* (FS). The former contributes to understanding the historical distributions of ai^3 and the latter represents the contemporary distributions of ai^3. The above materials are suggestive of a cline starting from the psych verb ai^3 to the volitional verb ai^3 and the intentional verb ai^3 and eventually to the deontic modal ai^3. Though only sporadic cases of the intentional ai^3 can be found in the data, the existence of the intentional ai^3 is crucial to the emergence of deontic modals. For one thing, the subject of the intentional ai^3, which makes imposition on others, provides a higher authority required by deontic modals. For another, the force of the intentional ai^3 sets up a semantic basis for the emergence of deontic modals. The development of deontic modal ai^3 is illustrated in Figure 7 based on Bybee, Perkins & Pagliuca (1994:240):

psych verb $\longrightarrow$ desire $\longrightarrow$ intention $\longrightarrow$ obligative modal

(volition) $\searrow$ $\nearrow$

necessity

Figure 7. The path of development from psych verb *ai*^{3} to deontic modal *ai*^{3}

A direct path of development which leads to the deontic modal *ai*^{3} is from a verb of volition to an intentional verb and eventually to a deontic obligative modal. Subjectification applied at the time when the intentional verb *ai*^{3} changed into a deontic modal *ai*^{3}, a process that motivated the causer of the imposition to be demoted and escape from the overt predication, yet keep on influencing the overall interpretation. Through the operation of subjectification, the causer of the imposition can thus hide in the background of the deontic modal *ai*^{3} while continuing to be involved in the force interactions between the causer of the imposition and the agent that is under the effect of the imposition.

It is worth noting that two functions of *ai*^{3}, i.e., *ai*^{3} as a verb of necessity and *ai*^{3} indicating assumptive prediction, are not assumed to be directly involved in the primary cline of modal emergence. Though the meaning of the necessity *ai*^{3} seems to have contributed to the meaning components of the deontic modal *ai*^{3}, the lack of force interactions in the semantics of the necessity *ai*^{3} suggests that it is but a minor factor in the change. Moreover, since the use of an assumptive *ai*^{3} is quite restricted in context with adverse meanings and its grammatical status is still debatable, it is better to be left in a separate cline and wait for the results of further studies.

This study has three implications for researches into language systems and lexical change. First, since the evolution of the deontic modal *ai*^{3} in SM reveals the subjective nature of deontic modals, both deontic modals and epistemic modals involve subjectivity. Depending on the degree of being subjectivized, deontic modals and epistemic modals can be aligned in a continuant system which is defined by subjectivity. In this sense, subjectification can be a shared evolutionary motivation for both epistemic and deontic modals. Moreover, the evolutionary process of the deontic modal *ai*^{3} suggests that semantic force interactions can be preserved and remain at work even when some of the participants are removed from the sentence during the emergence of deontic modals. Finally, the preservation of force during the change proves that grammaticalization does not necessarily lead to loss or bleaching. Meanings and functions can be preserved or even be strengthened during the change.

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從意願到義務:經主觀化的涉力變化

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　　本文檢視明清的閩南語戲文《荔鏡記》(又名《荔枝記》)和當代的閩南語故事集，梳理閩南語義務情態動詞「愛」(ai^3)之發展及演變，用以解釋主觀化機制在義務情態詞衍生過程中的重要性(Traugott 1989, Langacker 1990)。本研究發現，閩南語「愛」在晚近才出現義務情態用法，這應是由同樣牽涉「力互動」(force interaction)之表意圖的動詞「愛」(Talmy 2000)經由主觀化機制變化而成。此變化是建立在表意圖的「愛」與義務情態「愛」之間整齊對應的動力結構上，而此平行結構亦證明語意力互動的關係在語言變化過程中受到保存。一般認為主觀化機制與認知情態詞的產生有關(Traugott 1989, Sweetser 1990)，而本研究之發現則可驗證主觀化機制是衍生涉力情態詞的一個共同驅動過程。

關鍵詞：主觀化、動力理論、意願、義務情態、意圖動詞