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 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 in Southern Min is assumed to have developed from the intentional ai 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 (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 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

* This paper is based on the fifth chapter of my dissertation (Hsu 2013), though some of the original analyses have been extended and revised to make the theory more complete. I appreciate my supervisor Prof. Fengfu Tsao for his helpful and insightful comments on my dissertation. I would also like to thank two anonymous reviewers for their valuable suggestions, which have led to great improvements in this paper. I am of course solely responsible for any errors that still remain.

† 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 willan gœn ‘I want to go’ (Visser 1963-1973:502). In this study, the premodals of the deontic modal ai refer to lexical verb ai 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 16\(^{th}\) century to the 19\(^{th}\) 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.

\(^2\) 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 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* to the deontic modal *ai*. 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* 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.

![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. 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. 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). 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 intrapsychological and interpsychological types. For the intrapsychological 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 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.

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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*.

![Figure 2. Force-dynamic patterns of hold oneself back and refrain (adapted from Talmy 2000:431)](image)

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):
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 ai3 to the deontic modal ai3, 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 ai3 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 ai3 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 ai3 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 modalunda, 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. masi unda (rom) gaak’etos
   s/he.DAT s/he.want.it COMP s/he.do.it.SBV
   ‘S/he wants to do it.’ or ‘S/he wants him j /her j to do it.’

b. mani unda (*rom) gaak’etos
   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 ai³ in SM include Chang (2009) and Lien (2013). Chang (2009) investigates the diachrony of the verbs of volition ai³ and beh⁴, while Lien (2013) explores the relationship between the desiderative modal beh⁴ and the volitional verb ai³. Ai³ as a verb in contemporary SM means ‘love’, ‘prefer’, ‘tendency’, ‘intend’, and ‘need’ according to Lien (2013), as summarized in (5a-e). Among them, (5d) characterizes a pivotal construction in which the object of the intentional verb ai³ also serves as the subject of the embedded verb siu¹-tsoo¹ ‘collect rents’. The pivotal construction is crucial to the emergence of the deontic modal ai³ since it explicitly introduces a causer, e.g., lau⁷-pe⁷ ‘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 ai³ can be obtained.

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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.
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(5)  a. 伊足愛讀冊。  [FS Miaoli 72.09]
    \[i^1 tsio^{k} ai^{3} thak^{4}-tsheh^{4} \]
    3SG DG love read-book
    ‘He likes reading very much.’

b. 看你愛佗一隻, 你牽去。  [FS Tainan 26.06]
    \[kuann^{3} li^{2} ai^{3} to^{2} tsit^{4} tsiah^{4}, li^{2} khan^{1}-khi^{3} \]
    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. 老父愛這個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
    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 \(tsio{k}^{8}\) 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), ai³ 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。  
\[\text{ai}^3 \text{ kha}^4 \text{ se}^3 \text{ ji}^7 \text{ leh}^0\]  
DEO more careful PRT  
‘(You) should be more careful./take care of yourself.’

(7)  哑公莫急，愛易老。  
\[\text{a}^1 \text{kong}^1 \text{ bok}^8 \text{ kip}^4, \text{ ai}^3 \text{i}^2 \text{ lo}^2\]  
DIM-master NEG hurry ASSU easy old  
‘Sir, don’t be in such a hurry, otherwise you will get old easily.’

The use of ai³ 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 ai³, according to Chang (2009). One of these is metaphorization (Heine, Claudi & Hünnemeyer 1991), which explains the change of ai³ 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 ai³, the developmental paths and the triggering forces for those changes, specifically from the volitional ai³ to the deontic modal ai³, remain to be explored.

3. Research materials

For the purpose of this study, the tokens of ai³ 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. 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 *ai³* due to the scarcity of faithful material written in SM in Taiwan before the 19th century. The number of valid samples of *ai³* collected from the four editions of *Li Jing Ji* totals 324, and the number of instances of *ai³* in the collection of FS totals 1816. All the samples have been carefully tagged according to their functions.

4. Distribution and development of *ai³* in SM

Compared to non-modal uses of *ai³*, the nowadays predominant use of the deontic modal *ai³* appeared quite late in history. No tokens of deontic modal *ai³* can be found before the 20th century. Another latecomer is the intentional use of *ai³*, which did not occur until the 17th century. In contrast, four functions of *ai³* remained to be used since the 16th century, including the psych verb *ai³*, the volitional verb *ai³*, *ai³* as a verb of necessity, and *ai³* expressing assumptive prediction. However, the frequency of the psych verb *ai³* and the assumptive *ai³* 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 *ai³* showed a substantial increase from 0% to 55% by the end of the 20th century. It is also worth noting that the frequency of *ai³* as a verb of necessity grew from 0% to 9% at about the same time. On the whole, the first three significant uses of *ai³* in historical SM are the psych verb *ai³* (averaging 68%), the volitional verb *ai³* (averaging 21%), and the assumptive *ai³* (averaging 8%), whereas the most common use of *ai³* in contemporary SM is the deontic modal *ai³* (averaging 55%), followed by the volitional verb *ai³* (averaging 25.7%), and *ai³* as a verb of
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

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

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.

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]
\[
\text{li}^2 \text{siong}^7 \text{ai}^3 \text{tsinn}^5 \\
2SG \ DG \ like \ money
\]
‘Money is first in your affections.’

b. 我愛食乳汁。 [SZ 5.055]
\[
\text{gua}^2 \text{ai}^3 \text{tsiah}^8 \text{ling}^1 \text{tsiap}^8 \\
1SG \ like \ eat \ milk
\]
‘I like to drink milk.’

c. 你向愛人笑。 [SZ 17.201]
\[
\text{li}^2 \text{siong}^7 \text{ai}^3 \text{lang}^5 \text{tshio}^3 \\
2SG \ DG \ like \ people \ smile
\]
‘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]
    i 1 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 ai3 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 ai3 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 ai3 meaning ‘want’ or ‘desire’

The core sense of the volitional verb ai3 is ‘want’ or ‘desire’. Since volition is
itself a kind of performative force according to Searle (1983:30), the volitional verb
ai3 differs from the psych verb ai3 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 ai3 remains as a clause taking a subject which is referentially controlled by the
grammatical subject of the volitional verb ai3. 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
Examples of the volitional \( ai^3 \) from \textit{Li Jing Ji} are shown in (11a) and (11b), of which (11a) has a nominal complement and (11b) a verbal complement:\(^{19}\)

\[(11)\]  
\begin{enumerate}
\item a. 別人我不愛，那愛益春。  
\[\text{pat}^4 \text{ lang}^5 \text{ gua}^2 \text{ bu}^2 \text{ ai}^3, \text{ na}^2 \text{ ai}^3 \text{ ik}^6\text{-tshun}^3\]
\textit{other people 1SG NEG want only want Ik-Tshun}
\textit{‘I don’t want other women. The only woman I want is Ik-Tshun.’}
\item b. 愛看伸手來提去看。  
\[\text{ai}^3 \text{ khuann}^3 \text{ tshun}^1\text{-tshiu}^2 \text{ lai}^5 \text{ the}^4\text{-khi}^3 \text{ khuann}^3\]
\textit{want see stretch-hand CONN take-go see}
\textit{‘(If you) want to see it, put out your hand and take it.’}
\end{enumerate}

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

\[(12)\]  
\begin{enumerate}
\item a. 安呢啦，我愛一個雞嫩仔。  
\[\text{an}^2\text{-ne}^1 \text{ lah}^0, \text{ gua}^2 \text{ ai}^3 \text{ tsit}^4\text{-e}^7 \text{ ke}^1\text{-nua}^7\text{-a}^2\]
\textit{this PRT 1SG want one-CL chicken-testis-DIM}
\textit{‘Okay, I would like to have one chicken testis.’}
\item b. 看你愛食啥盡量買。  
\[\text{kuhann}^3 \text{ li}^2 \text{ ai}^3 \text{ tsiah}^8 \text{ siann}^2 \text{ tsin}^7\text{-liong}^7 \text{ bu}^2\]
\textit{want see 2SG want eat what to.a.great.extent buy}
\textit{‘See what you like and buy as many as you want.’}
\end{enumerate}

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

\(^{19}\) 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 \( ai^3\text{-beh}^4 \), and all of them select VP as their complements. The other 38 tokens are \( beh^4\text{-ai}^3 \), of which 32 take nominal complements (including the construction ‘\( beh^4\text{-ai}^3 + NP + purposive phrase\)’, such as \( beh^4\text{-ai}^3 i^1\text{ tso}^3 \text{ boo}^2\) ‘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.

\begin{itemize}
\item[(13)] a. \text{今爱卜辞哥嫂。} \quad [JJ 12.031]
\begin{tabular}{llll}
kin & ai$^3$-beh$^4$ & si$^5$ & ko$^1$-so$^2$
\end{tabular}
\text{now \hspace{5pt} want \hspace{5pt} farewell \hspace{5pt} brother and sister-in-law}
\text{‘Now (I) want to say farewell to (you, my) brother and sister-in-law.’}

b. \text{爱卜三人共一心。} \quad [SZ 19.165]
\begin{tabular}{llll}
ai$^3$-beh$^4$ & san$^1$ & lang$^5$ & kang$^7$ & tsit$^4$ & sim$^1$
\end{tabular}
\text{want \hspace{5pt} three \hspace{5pt} people \hspace{5pt} same \hspace{5pt} one \hspace{5pt} heart}
\text{‘(I) want the three (of us) to be harmonious.’}
\end{itemize}

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.\footnote{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.}

When $ai^3$ is used as a modal, it can only be deontic or even more functionalized, but not as dynamic as $beh^4$.

\textbf{4.3 \textit{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 \textit{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
simplicity, 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).

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):

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,
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。

\[
\begin{array}{ccccccc}
\text{li}^2 & \text{kin}^1 & \text{ia}^7 & \text{ai}^3 & \text{ka}^7 & \text{gua}^2 & \text{koo}^3 \\
2\text{SG} & \text{now also} & \text{DEO} & \text{DAT} & 1\text{SG} & \text{care} & \text{LIN} \\
\end{array}
\]

‘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 \textit{Li Jing Ji} (about the 16\textsuperscript{th} century). Examples of the assumptive \( ai^3 \) in \textit{Li Jing Ji} are shown in (7) and (17):
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.

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:

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。

lun$^3$ kiann$^2$-ji$^5$ su$^1$ sik$^4$ le$^2$-gi$^7$,
teach child need know manners-loyalty
ti$^7$ ke$^4$-huat$^4$ kok$^4$ ai$^3$ tsun$^1$-pi$^i$
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. 爱一担水转来才有通洗身躯。 [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. 咱人卜好著犹然爱有一个福份。 [FS Miaoli 58.107]
lan²  lang⁵  beh⁴  hoo²  to⁷  iu¹-guan⁵  ai³  u⁷  tsit⁴-e⁷  hok⁸-hun⁷
IPL  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 ai³ often combines with another verb of necessity tioh⁸ to make a complex form of necessity tioh⁸-ai³, as shown in (22):

(22) 彼个查某著爱有够巧才有法度选人。 [FS Yunlin 102.01]
hit⁴-e⁵  tsa¹-boó²  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.’

Ai³ resembles tioh⁸ 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 ai³ will be provided in the next section.

4.6 Ai³ as an obligative modal

While no obligative modal ai³ is seen in historical SM, it is the most frequently used function in contemporary SM. A great number of examples of obligative ai³ are found in Go-en, a periodical published from 1895 to 1945 in SM with Japanese translations. Similar to the volitional ai³, which can combine with beh⁴ to generate the complex volitional beh⁴-ai³, the obligative modal ai³ can also combine with another obligative modal tioh⁸ to make a complex modal tioh⁸-ai³, as shown in (23a).

24 There is an asymmetry between the two possibilities of complex modals made up of ai³ and tioh⁸. Though the cases of tioh⁸-ai³ number over 300 tokens in FS, only one case of ai³-tioh⁸ can be found. The combination of ai³ and tioh⁸ seems to occur quite late in history, at least as late as the 19th century.
(23)  a. 你著愛想辦法啊！
   li²  tioh⁸-ai³  siunn⁷  pan⁷-huat⁴  ah⁰
   2SG  DEO  think  solution  PRT
   ‘You should figure out how to deal with it!’

   b. 我愛有孝阮老母才著。
   gua²  ai³  iu²-hau³  guan²  lau⁷-bu²  tsiah⁴  tioh⁸
   1SG  DEO  filial  1SG.POSS  DIM-mother  just  right
   ‘I should devote myself to my mother with filial piety.’

   c. 你有聽 e⁰ 無？你著記 e⁰ 啦！
   li²  u⁷  thiann¹-e⁰  bo⁵  li²  tioh⁸  ki³-e⁰  lah⁰
   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 ai³ and tioh⁸ can be used as deontic modals, they contrast in their force of speech. Originating from an expression of love, the obligative ai³ implies a speaker’s empathy and low level of coercion. Therefore, in cases of the deontic modal ai³ 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 ai³ 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 tioh⁸ 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 tioh⁸ then makes the deontic modal tioh⁸ an unfavorable choice if compared to the deontic modal ai³ or the compound modal made up with both tioh⁸ and ai³.

The intentional verb ai³ may give rise to the deontic use of ai³ since there exist potential alternations between the intentional verb ai³ and the deontic modal ai³, 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 ai³ 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 ai³ appears in an immediate speech context, which is favored by discourse-oriented deontic modals because neither tioh⁸-ai³ nor ai³-tioh⁸ can be found in Li Jing Ji. The absence of compounds of ai³ and tioh⁸ can be attributed to the late emergence of senses of modality for both ai³ and tioh⁸.
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(Palmer 1990), such as the context in (14). The intentional ai³ hence makes itself an appropriate source of the deontic modal ai³.

The close relationship between the intentional verb ai³ and the deontic modal ai³ is demonstrated with the comparison between (24b) and (24c). Though (24b) involves the subject’s intentional force expressed by a causative verb, ai³ is used as a deontic modal, rather than as an intentional verb, to specify the obligation that the embedded subject i¹ ‘her’ is forced to take. The parallel interpretations between (24b), which has a deontic modal ai³, and (24c), which by contrast takes an intentional verb ai³, thus prove the close relationship between the intentional ai³ and the deontic modal ai³.

(24) a. 我叫阮翁去買啊！
   gua² kio³ guan² ang¹ khi³ bue² ah⁰
   1SG CAU 1SG.POSS husband go buy PRT
   ‘I sent my husband to buy (sour food for me).’

b. 倫老父就叫伊講愛拋繡球。
   in¹ lau⁷-pe⁷ to⁷ kio³ i¹ kong²
   3SG.POSS DIM-father CONN CAU 3SG say
   ai³ phau¹ siu³-kiu⁵
   DEO throw silk.ball
   ‘So her father wanted her to throw the silk ball.’

c. 倫老父就愛伊拋繡球。
   in¹ lau⁷-pe⁷ to⁷ ai³ i¹ phau¹ siu³-kiu⁵
   3SG.POSS DIM-father CONN INT 3SG throw silk.ball
   ‘So her father wanted her to throw the silk ball.’

The verb kio³ ‘call’ in (24b) is a general causative marker in SM, which can by itself express causative meanings, as shown in (24a). The intentional verb ai³ 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 ai³ in (24b) only serves to specify the impact of the force interaction on the embedded subject since the causative verb kio³ has already taken over the causative function. In other words, the deontic modal ai³ has weaker coercive force than the intentional ai³. That deontic modal ai³ 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 ai³. Therefore, it is more likely for the deontic modal ai³ to be adopted when it comes to expressing force-involved interactions. The reduction of causation throughout the change from the intentional ai³ to the deontic modal ai³ also suggests that the causer of the intentional ai³ 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](image)

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).

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 $ai^3$. 
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.

Figure 4. The multi-dimensional continua of diachronic subjectification

<table>
<thead>
<tr>
<th>Continuum</th>
<th>Propositional function</th>
<th>Discourse function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Objective meaning</td>
<td>Subjective meaning</td>
</tr>
<tr>
<td></td>
<td>Non-epistemic modality</td>
<td>Epistemic modality</td>
</tr>
<tr>
<td></td>
<td>Non-syntactic subject</td>
<td>Syntactic subject</td>
</tr>
<tr>
<td></td>
<td>Syntactic subject</td>
<td>Speaking subject</td>
</tr>
<tr>
<td></td>
<td>Full, free form</td>
<td>Bounded form</td>
</tr>
</tbody>
</table>

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.

Figure 5. A change from the intentional verb \( ai^3 \) to the deontic modal \( ai^3 \)

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., ‘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 semantic 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
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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 $\text{ai}^3$, the intentional $\text{ai}^3$ and the deontic $\text{ai}^3$ 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 $\text{ai}^3$ 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 $\text{ai}^3$ or the intentional $\text{ai}^3$, 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 $\text{ai}^3$ to emerge from the intentional $\text{ai}^3$. 
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):
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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關鍵詞：主觀化、動力理論、意願、義務情態、意圖動詞