Globe: A Journal of Language, Culture and Communication, 1: 126-151 (2015)

Inferring cultural models from corpus data: force-dynamic cultural models reflected in the discursive behavior of a scalar adjectival construction*

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Abstract: One of the main tasks in cognitive anthropology is the reconstruction of cultural models, which are behavior-regulating schematic cognitive models that are intersubjectively shared in a community. Given their behavior-regulatory status, cognitive anthropologists and other cognitive scientists have developed methods of inferring cultural models from observed behavior – in particular, observed verbal behavior (including both spoken and written language). While there are plenty of studies of the reflection of cultural models in artificially generated verbal behavior, not much research has been made into the possibility of inferring cultural models from naturally occurring verbal behavior as documented in language corpora. Even rarer are such corpus-based studies of the interaction between cultural models and constructions. Exploring the usability of corpus data and methodology in the observation of constructional discursive behavior, the present paper offers a covarying collexeme analysis of the [*too* ADJ *to* V]-construction in the *Corpus of Contemporary American English*. The purpose is to discover the extent to which its force-dynamic constructional semantics interacts with cultural models. We focus on three instantiations of the construction – namely, [too young to V], [*too proud to* V], and [*too macho to* V] – to see whether there are patterns in their ranges of coattracted verbs that are indicative of force-dynamic relations in cultural models of AGE, PRIDE, and MACHISMO respectively.

Keywords: corpus linguistics, covarying collexeme, cultural model, scalar adjectival construction.

1. Introduction

One of the main tasks in cognitive anthropology is the reconstruction of cultural models. Cultural models are cognitive structures, which Quinn & Holland (1987: 4) define as "presupposed, taken for granted models of the world that are widely shared … by members of a society and that play an enormous role in their understanding of the world and their behavior in it". Indeed, a common method of identification and reconstruction of cultural models in cognitive anthropology is to infer them from observed behavior. In particular, cognitive anthropologists and researchers within related cognitive sciences, such as cognitive linguistics and cognitive psychology, have developed a number of methods of inferring cultural models from verbal behavior, including the use of interview data and language-oriented questionnaires. The term 'verbal' is sometimes used with reference to spoken communication only, contrasting it with written communication. Another sense of 'verbal', however, refers to language use and products of language use in general, including both speech and writing (much like the way it is used in the term 'verbal art'). In the present paper, it is the latter sense of 'verbal' that applies. 'Verbal behavior' in this paper, then, refers to spoken and written language use as social behavior by members of a speech community.

Corpus data document naturally occurring language in fairly naturalistic settings (i.e. written and spoken language that occurs in actual discourse, serving actual communicative purposes, as opposed to language elicited in experimental settings). Gries (2009: 8) offers a brilliant definition of the naturalistic nature of the texts in a corpus: "The texts were spoken or written for some authentic communicative purpose, but not for the purpose of putting them into the corpus". With this in mind, it stands to reason that corpus data and methodology should be particularly useful. However, aside from work by Gries & Stefanowitsch (2004) and Stefanowitsch (2004), there has not been much research on cultural models as reflected in corpus data. Of course, there is plenty of corpus-based research that addresses cultural issues, such as Leech & Fallon (1992), Ooi (2000), and Elsness

* I am grateful to two anonymous reviewers for their comments. I am fully responsible for any errors or shortcomings.

(2013). While the notion of cultural models does not figure in such studies, they do clearly show that verbal behavior, as defined in this paper, is indeed reflective of underlying cultural systems and that corpus data and methods constitute a way to rigorously, empirically, and systematically investigate the language-culture interrelation. As Ooi's (2000) study of collocations in Asian Englishes shows, pairings of lexemes may display behavior reflective of cultural concepts. Given that, in a cognitive linguistic perspective, it is now more or less accepted that constructions are meaningful units of grammar that serve various communicative functions, we can assume that constructions, like collocations, may also display discursive behavior which is reflective of underlying cultural systems.

This is the issue that this article addresses. In particular, we are interested in observing ways in which the discursive behavior of one specific construction may reveal aspects of underlying cultural models – namely, the [*too* ADJ *to* V]-construction, which in itself has not been extensively explored (but see Fortuin 2013, 2014). Consider the following examples, which were extracted from the *Corpus of Contemporary American English*, or *COCA* (available at Davies 2014):

(1) The tatty furniture betrayed elegant lines, and the windows, *too grimy to see through*, stretched up ten feet. (COCA 2011 FIC Bk:NeverGentleman)

(2) They're *too slow to catch a seal in open water*. (COCA 2011 MAG NationalGeographic)

(3) One day I moved boulders in a sleet storm. There were nearly a hundred of them and they were *too heavy to lift*, so I had to stay down on my knees the whole day pushing them an inch or two at a time. (COCA 1995 FIC HarpersMag)

In all three examples the construction seems to specify a force-dynamic relation between the adjective and the verb in which the adjective is assigned a high degree of the attribute it expresses (henceforth ADJNESS). The force-dynamic relation lies in this high degree of ADJNESS being construed as having a preventive effect on the situation expressed by the *to*-infinitive clause that follows. In all three cases, the relation of PREVENTION is arguably quite logical and based on more or less universal experiences. A high degree of GRIMINESS naturally prevents people from seeing through a window, and it also seems quite natural that a high degree of SLOWNESS should prevent someone from catching seals in open water, or any other fast-moving entity in any other environment. Lastly, an excess of HEAVINESS should quite naturally make the heavy entity difficult to lift. Now, compare the above examples to the following ones:

(4) Rabbi Feinstein's legal judgment with respect to romantic love among persons *too young to marry* was definitive. (COCA 2007 NEWS NYTimes)

(5) I'm in a certain group that's almost *too old to hire*. (COCA 2011 NEWS Denver)

(6) He just smiled, *too polite to answer*. (COCA 2009 NEWS Denver)

The same type of preventive force-dynamic relation between the adjectives and verbs applies here, but, in these examples, the semantic relations are arguably not based on natural relations of force-dynamics, but seem to be filtered through cultural perception. For instance, the age at which marriage is appropriate depends on the parameters of MARRIAGE established within the culture in question. Likewise, exactly when someone is too old to hire is likely to depend on a range of cultural parameters, and what is considered polite and impolite in which situations and exactly what

constitutes POLITENESS itself may vary from culture to culture. In other words, the behavior of [*too* ADJ *to* V] in examples (4)-(6) seems to link up with, and be reflective of, and perhaps regulated by, underlying cultural models of AGE and POLITENESS.

In this article, we will investigate, via observation of its behavior in *COCA*, the extent to which the [*too* ADJ *to* V]-construction may be said to interact with such force-dynamic cultural models. Concurrently, we will explore the usability of corpus data and methodology in inferring cultural models from verbal behavior. It should be mentioned that, out of the two purposes of the present article, the latter is the primary one. This study is primarily an exploratory one and, while a number of interesting findings pertaining to the interaction between the construction and cultural models that draw on the relation of PREVENTION do emerge from our data, this is by no means an exhaustive or definitive analysis of the construction and its relation to cultural models in American culture.

This article is structures as follows. Section 2 addresses and defines cultural models and also touch upon their reflection in verbal behavior. Section 3 offers a brief description of the [*too* ADJ *to* V]-construction within a construction grammar framework, based on Jensen (2014a; see also Jensen 2014b), while chapter 4 accounts for the data and method applied in the present study. The following three chapters address how the following instantiations of the construction may, in their discursive behavior, be reflective of underlying cultural models: [*too young to* V], [*too proud to* V], and [*too macho to* V]. While there are other instantiations, in which force-dynamic cultural models emerge in the construction's discursive behavior (i.e. patterns of usage) associated, these three particular instantiations were selected, because the underlying attributes expressed by the adjectives *young*, *proud*, and *macho* are presumably tied in with a number of cultural values, thus making them particularly suitable case studies for the exploration of the usability of corpus data and methodology in inferring cultural models.

2. Cultural models

This section provides a definition of the notion of a cultural model. While there is plenty of literature within cognitive anthropology and other cognitive sciences that deals with cultural models, the definition offered here draws on scholars whose work is particularly relevant – in terms of theory, method, or both – to the study of cultural models and their relation to language and interaction.

On Quinn & Holland's (1987: 4) definition above, cultural models are both social and cognitive, as they are constitutive of the encyclopedic knowledge of the world associated with the worldview of a society or community. The encyclopedic nature of cultural models is central in Kronenfeld's (2008: 69) statement that cultural models "provide scenarios or action plans for how to behave in some given situation or how to interpret the behavior of others in one or another situation". Likewise, in their study of cultural models of education in America in three different ethnic perspectives, Fryberg & Markus (2007: 214) point out that cultural models are behavior-mediating and -regulating "taken-for-granted patterns of ideas and practices" which are derived from previous experiences. Cultural models thus cover "cultural assumptions and meanings that are available in particular contexts" (Fryberg & Markus 2007: 215). As D'Andrade (1981: 182) reminds us, cultural models are experiential also in the sense that they are shaped via "repeated social transmission".[1]

From these definitions, it follows that cultural models influence the understanding of the world within a given society and that cultural models are both experientially acquired and socially

1 D'Andrade (1981), drawing on a BRAIN-COMPUTER analogy, actually uses the term 'cultural program', but his description of such 'cultural programs' overlaps considerably with the definitions of 'cultural schemata', 'cultural models' and 'folk models' offered elsewhere in the literature within cognitive anthropology. For a discussion of the implications of the various terms used for what we call 'cultural models' in this paper, see Keesing (1987).

transmitted via interaction with other members of the same community. Moreover, due to their taken-for-granted nature, cultural models typically have common ground status within the community in question and are more or less conventionalized. Kronenfeld (2008: 71-72) elaborates on this:

> When we do anything with others, including talking (!), it is necessary to interrelate our separate cognitive structures; and when we routinely do something with a variety of others we will tend to develop some standardized way of doing it – where "standardized" refers to categories of actions, items, acceptable results, and so forth. These shared action plans emerge as cultural models.

In a similar vein, D'Andrade (1987: 112) offers this definition: "A cultural model is a cognitive schema that is intersubjectively shared by a social group", specifying that intersubjective sharing is the knowledge that other people also know what you know (D'Andrade 1987: 113). We should probably fine-tune the concept of intersubjective sharing such that it also covers the assumption or presupposition (in addition to the knowledge) that other people also know what you know.

D'Andrade's (1987: 112) definition also specifies the schematic nature of cultural models. As Rice (1980) reminds us, structures in cultural cognition are generally schematic. She points out that "[a] schema can be thought of as an abstracted pattern into or onto which information can be organized", arguing that it "is best seen as being at the same time both structure and process" and that "different schemata encompass various scopes and can be applied at various levels of abstraction" (Rice 1980: 153),[2] and Kronenfeld (2008: 69) argues that they are abstract structures that vary in degrees of specificity.

If cultural models are intersubjectively shared cognitive structures that constitute encyclopedic knowledge, how do they differ from what cognitive linguists call 'cognitive models', and how do they relate to the universal aspects of human cognition? In some cases, it seems that there is no difference. For instance, Lakoff (1987) often uses the term 'idealized cognitive model' with reference to structures very similar to cultural models which applies to his discussions of the concepts, MOTHER (Lakoff 1987: 74-76, 80-82), and HOUSEWIFE (Lakoff 1987: 79-80), and he also briefly discusses folk models (Lakoff 1987: 118). In Lakoff & Kövesces' (1987) study of the conceptualization of ANGER in American English, the term 'cultural model' is used to cover a cognitive phenomenon very similar to many of the phenomena called (idealized) cognitive models in Lakoff (1987). In a rather consistent approach, Ungerer & Schmid (2006: 51) emphasize the cultural specificity of such models:

> Cognitive models are of course not universal but depend on the culture in which a person grows up and lives. The culture provides the background for all the situations that we have to experience in order to be able to form a cognitive model. A Russian or German may not have formed a cognitive model of cricket simply because it is not part of the culture of his own country to play that game. So, cognitive models for particular domains ultimately depend on so-called **cultural models**. In reverse, cultural models can be seen as cognitive models that are shared by people belonging to a social group or subgroup. (boldface in original)

However, Rice (1980: 154) points out that cultural models do involve more universal cognitive

2 Schema theory is, of course, widespread in the cognitive sciences and may be traced back to Gestalt psychology and early educational psychology. Consequently, it should be no surprise that cultural models, as envisioned in cognitive anthropology, are held to be schematic. See Rice (1980: 155) for a number of arguments for the application of schema theory in cognitive anthropology and other cognitive sciences.

phenomena:

> On the continuum between the universal and the idiosyncratic lie the culturally derived schemata. Like the idiosyncratic ones, they are experientially developed. But they have in common with universal schemata a wider distribution.
>
> It is these cultural schemata, these socially-given perceptual modes, which operate to produce a recognizable "weltanschauung," or worldview. A theory which views comprehension as based on assimilation to mental schemata proceeds on the assumption that the cognitive processes involved are universal ... It is certain kinds of components of schemata which are culturally specific (Rice 1980: 154).

Cultural models are cognitive schemata in which universal cognitive processes and principles are involved, but which – as wholes – are culturally specific and figure – as intersubjectively shared structures – in the worldview of a community or society. As regards the distinction between cognitive models and cultural models, the differentiation seems to be a matter of intra-theoretical perspective and, ultimately, a quasi-artificial one:

> Essentially, cognitive models and cultural models are just two sides of the same coin. While the term 'cognitive model' stresses the psychological nature of these cognitive entities and allows for inter-individual differences, the term 'cultural model' emphasizes the uniting aspect of its being shared by many people. Although 'cognitive models' are related to cognitive linguistics and psycholinguistics while 'cultural models' belong to sociolinguistics and anthropological linguistics, researchers in all of these fields should be, and usually are, aware of both dimensions of their object of study. (Ungerer & Schmid 2006: 52)

Thus, if a more ontological distinction is to be made, then it would simply be that cultural models are cognitive models that have become conventionalized within a given culture. Such a distinction would still allow both the psychological and social dimensions of such cognitive structures to be taken into account.[3]

Drawing on the above discussion, we can set up the following general features of cultural models:

- cultural models are schematic cognitive models, which involve universal cognitive structural principles and processes
- cultural models are intersubjectively shared in a community and thus culturally specific
- cultural models are presumed by the members of the community to be intersubjectively shared
- cultural models guide the community members' understanding of the world and people
- cultural models are behavior-mediating and behavior-regulating

3 As is apparent from the above, 'cultural' is often contrasted with 'universal'. Consequently, it may be tempting to argue that a cultural model has to be exclusive to one community only to qualify as cultural, and that, if it does not do that, then it is universal. However, this would grossly simplify matters, as the difference between 'cultural' and 'universal' is somewhat blurred. For instance, Communities A and B may share a cultural perception of phenomenon X, but differ in their cultural perceptions of phenomenon Y. Community C, however, shares neither Community A and B's cultural perception of phenomenon X nor their perception of phenomenon Y. Community A and Community B's cultural perception of phenomenon X is not universal, because C does not share it. But it would be incorrect to state that A and B's perception is not cultural.

For the sake of illustration, here are some examples of various types of studies in cognitive anthropology and cognitive linguistics of cultural models. The cultural models addressed are quite different from the force-dynamic cultural models discussed in this paper, and they also differ quite considerably from one another. This shows just how ubiquitous cultural models are, and that they can be found in all layers of cultural and social cognition. One study deals with cultural models of EDUCATION, covering elements such as the PURPOSE OF EDUCATION, TEACHER-STUDENT RELATIONSHIP, and ideas of the SELF in educational contexts (Fryberg & Markus 2007: 216-220). Fryberg & Markus address cultural models of EDUCATION among Native American, Asian American, and European American students and how they differ in terms of the three above-mentioned elements. A quite different pair of phenomena is cultural models of BREAKFAST in French and British cultures, as discussed by Ungerer & Schmid (2006: 52-53). Ungerer & Schmid address BREAKFAST within the domain of STAYING AT A HOTEL in France and Britain respectively. PETIT DÉJEUNER and ENGLISH BREAKFAST differ in terms of components, the former only consisting of COFFEE and a CROISSANT, while the latter consists of a considerably larger number of components. The former is SERVED at BEDSIDE or taken at a CAFE and is not included in the ROOM RATE, while the latter is served in the hotel's BREAKFAST ROOM and is included in the ROOM RATE. While these cultural models are considerably complex, there are of course also simple cultural models, as exemplified by Ungerer & Schmid's (2006: 53-54) discussion of the differences between prototypical DESKS in Europe and Asia which are historically dependent on different traditional body postures assumed when writing, with Europeans typically sitting on chairs and Asians typically sitting on the floor. Another study reported in Ungerer & Schmid (2006: 54-55) addresses prototypicality of food lexemes in Nigerian English and American English and finds that speakers of the two varieties of English rank FOOD types quite differently. For instance, the three highest ranking items in the FOOD category in Nigerian English are *beans*, *rice*, and *yam*, while the three highest ranking items in American English are *chicken*, *fish*, and *bread*. Moreover, speakers of Nigerian English list items such as *millet*, *groundnut*, and *maize* as FOOD lexemes, which do not figure in the rankings by American English speakers. This is indicative of somewhat different underlying cultural models of FOOD and categorizations of what counts a typical FOOD items in Nigerian and American cultures. Other examples of cultural models are the American folk model of how the MIND works (D'Andrade 1987), American gender stereotypes (Holland & Skinner 1987), the American cultural model of MARRIAGE (Quinn 1987), the American cultural model of LYING (Sweetser 1987), metaphors of morality (Bergen 2004: 31-33), and a cultural model of BUYER PASSIVITY and EXPLOITATION in COMMERCIAL TRANSACTION (Gries & Stefanowitsch 2004: 232-233).

2.1. Force-dynamic cultural models and the reflection of cultural models in behavior

Given that cultural models are behavior-mediating, they are also reflected behavior. I will illustrate this using a rather simple model of causal superstition. What characterizes models of causal superstition is a core relation of CAUSALITY, drawing on various image schemata of force-dynamics (Johnson 1987: 42-48; see also Talmy 2000: 409-470), such that, IF SITUATION P HAPPENS, THEN SITUATION Q INVARIABLY FOLLOWS. There is, of course, no objective or natural relation between the two situations, which is what makes such models superstitions, but they are more or less integral to the way that people in the community in question understand and interact with the world. As an example of one such model, allow me to use, in a rather informal and near-anecdotal fashion, a model which occurs in many European cultures – namely, the BLACK CAT BRINGS BAD LUCK superstition. In Danish culture, there is a variant of this superstition in which A BLACK CAT CROSSING ONE'S PATH MEANS BAD LUCK. This model draws on CAUSATION based on the COMPULSION image schema (Johnson 1987: 45), in which a force input causes an entity into motion or some other state of being non-static, such as the change from being NON-EXISTENT into being EXISTENT. Thus, there is a relation of COMPULSION between the situation of A BLACK CAT CROSSING ONE'S PATH and BAD LUCK in

the sense that the former causes the latter to invariably follow. As an owner of a black cat myself, I have observed patterns in people's interaction with our cat, and children in particular displayed behavioral patterns reflective of this superstition, ranging from attempts at chasing away our cat or otherwise preventing it from crossing their path over running away from the cat to even cowering in fear at the cat. Some would also engage in a ritual which is supposed to annul the BAD LUCK generated by a BLACK CAT – namely, spitting across one's left shoulder. This ritual draws on the image schema of COUNTER-FORCE (Johnson 1987: 46) and expands on the COMPULSION-based cultural model.[4] For further examples of the features of force dynamics, see Johnson (1987: 41-64); his (Johnson 1987: 53-57) discussion of modality offers some particularly clear illustrations of force-dynamic image schemata at play in language (see also Talmy 2000: 440-452 for an alternative approach to force-dynamics in modality).

Now, this example is of course of a rather anecdotal nature, and superstitions may be banal and even silly. However, superstitions are arguably very ingrained in people's cultural subconscious, as it were, and even non-superstitious people may find themselves regulating their behavior according to the underlying cultural models.

Causal superstitions are instances of what is called force-dynamic cultural models (Jensen 2014c). A force-dynamic cultural model is a cultural model in which a force-dynamic image schema plays a pivotal role. Force-dynamic cultural models are typical of, but by no means delimited to, superstitions. In the present study, we will encounter a number of such models in more "rational" contexts, and it may well be that force-dynamics is ubiquitous at a number of different levels in humans' understanding of the world around and between them.

2.2. Cultural models and corpus data

Language corpora document actually occurring usage-events (Kemmer & Barlow 2000: ix), and, thus, they are essentially collections of instances of verbal behavior, as defined in this paper. Since corpora capture a wide variety of verbal behaviors, it stands to reason that corpus linguistics provides both data and methodology that could be helpful in inferring and reconstructing cultural models.

Indeed, several studies in corpus linguistics have showed that corpus data and methodology can be used in revealing states-of-affairs in cultural space. For instance Leech & Fallon (1992) and Elsness (2013) make use of corpus data to reveal large-scale divergences and convergences between British and American English. Leech & Fallon (1992) base their study on the *London-Oslo-Bergen* (*LOB*) corpus of British English and the *Brown* corpus of American English both of which document their respective varieties of English in 1961. Looking at a number of linguistic variables, for instance, they found lexical divergence in various domains reflecting different ways of life and, consequently, cultures. In the domain of sports, for instance, they found that lexemes like *cricket* and *rugby* were prevalent in *LOB*, while *baseball* was prevalent in the *Brown* corpus. A more interesting find in this domain is perhaps that lexical terms pertaining to sports and physical activity were generally more prevalent in the Brown corpus than in *LOB*, which Leech & Fallon (1992: 38) take as an indicator that "the American way of life has a more dominant interest in sporting activities". In the domain of travel and transportation, Leech & Fallon (1992: 39) found that lexical terms pertaining to transportation, like *aircraft*, *car*, *wagon* as well as *mileage* and *river*, were significantly more frequent in the American corpus than in the British one, reflecting that, because of the huge distances to be covered when traveling in the USA, the domain of transportation

4 One could of course also make the argument that there is an inner COMPULSION which, caused by this particular superstition, drives people into chasing away the cat or engaging in the ritual. This does not necessarily mean that COUNTER-FORCE is not in play. On the contrary, if an active force-dynamic entity needs COMPULSION, then a COUNTER-FORCE also needs COMPULSION. This is perhaps captured better in Talmy's (2000: 440-452) AGONIST-ANTAGONIST model.

received more emphasis in American culture than British culture. Leech & Fallon (1992: 43) also find that there is a preference for masculine terms such as *boy*, *man*, and the masculine personal pronouns in the *Brown* corpus, while *gentleman* is more prevalent in *LOB*. In contrast to the masculine bias in the *Brown* corpus, terms relating to the domain of family are prevalent in *LOB*, such as *father*, *mother*, and *marriage*. Leech and Fallon (1992: 43; 44-45) take this to suggest that American culture in 1961 was characterized by masculinity as a cultural value while family was a more important cultural concept in Britain. In his follow-up study, Elsness (2013) investigates many of the same variables as Leech & Fallon (1992) in more recent British and American corpora and finds evidence of ongoing cultural convergence between British and American cultures. In his study of Singaporean English and Malian English collocations in a newspaper corpus, Ooi (2000) unearths a number of cultural concepts specific to these two cultures and the context(s) in which they exist. To illustrate, here are three of the collocations that Ooi identifies, accompanied by his description of their cultural relevance and meanings:

- *killer litter*: "[T]he term reflects a concern with this social menace [items thrown out from high rising buildings – KEJ], in a high-rise, high-density living society: Singapore comprises only about 500 sq. km. Thus, killer litter implies not only that the litter can be killing, but the person who does the act is a killer". (Ooi 2000: 81)
- *urine detector*: "While one might wonder whether this term has anything to do with urinalysis, it actually refers to a sensor inside a lift which, when someone urinates inside it, triggers an alarm and traps the offender in the elevator until the police arrive. Again, one can contribute the prevalence of this term in Singapore to a desire for more effective and technological means for catching social offenders". (Ooi 2000: 81)
- *normal stream*: "It is part of Singapore's competitive educational 'streaming' process where pupils are selected, on the basis of their school results, to go to the Gifted, Express, Normal or Technical Streams. Thus, a pupil who gets into the 'Normal' Stream is actually less than normal and is regarded as being merely average". (Ooi 2000: 83)

While Leech & Fallon (1992), Ooi (2000), and Elsness (2013) show that corpus data can be used in the analysis of culture and its reflection in language, there are few studies in which corpora are used as a method of inferring cultural models.[5] One such study is Gries & Stefanowitsch (2004). Gries & Stefanowitsch (2004: 232-233), in analyzing collostructional patterns in the [V *into* V-*ing*]-construction, find that verbs of trickery, coercion, and negative emotion tend to co-occur with verbs of commercial transaction, which reflects an underlying cultural model in which BUYERS are PASSIVE PARTICIPANTS and SELLERS are ACTIVE PARTICIPANTS.

Given that discourse is behavior and assuming that culture, language, and cognition are closely interrelated, cognitive anthropologists often use verbal behavior as their primary data, inferring cultural models from linguistically encoded cultural experiences. Of course, relating language to culture and cognition is by no means exclusive to cognitive linguistics and cognitive anthropology, as culture is undeniably a central feature of anthropological linguistic and sociolinguistic theory; already in the 1920s, Malinowski (1989 [1923]) argued that, in order to truly understand language, we must also understand cultural cognition.[6] Thus, for instance, Holland & Skinner (1987) infer and reconstruct the cultural model of MARRIAGE on the basis of an analysis of an interview in which marriage is discussed, while one of the methods applied in Fryberg & Markus (2007) is the use of an open-ended questionnaire in which their respondents verbally encode their

5 That said, Ooi's (2000) descriptions are not unlike Wolf & Polzenhagen's (2014: 147-154) descriptions of underlying cultural models of lexemes and collocations in Nigerian English and Hong Kong English.

6 See Duranti (1998) for a comprehensive overview of theories of culture in the humanistic and social sciences.

understanding of various aspects of the concept of EDUCATION. The studies reported in Ungerer & Schmid (2006) are based on goodness-of-exemplar ranking tasks, and Sweetser's famous study of the cultural model of LYING draws on introspection.

With the exception of introspection, methods such as questionnaires, interviews, and ranking tasks as well as attribute listing or term listing and sorting tasks,[7] are particularly useful in teasing out details of underlying cultural models.[8] This is because these methods construct artificial discourse situations which prime subjects and respondents into verbalizing the cultural models in fairly controlled and noise-free settings. In contrast, corpus data document verbal behavior in more naturalistic, and noisy, settings. One might argue that the fairly naturalistic and uncontrolled nature of corpus data provides the analyst with a way of inferring cultural models from naturally occurring language in which language and culture are in natural interplay. Thus, corpus data and methods arguably constitute a potentially very valuable addition to the repertoire of methods available to the empirically oriented cognitive anthropologist, cognitive psychologist, or cognitive linguist.

3. The [*too* ADJ *to* V]-construction

In the present article, [*too* ADJ *to* V] is considered a construction, as defined in construction grammar (e.g. Lakoff 1987: 462-587; Fillmore et al. 1988; Goldberg 1995, 2006; Croft 2001; Hilpert 2014); that is, it is a pairing of form and conventionalized meaning. The meaning plane of a construction encompasses both semantic and pragmatic meaning (Goldberg 1995: 7) and is reflective of underlying cognitive structures and processes. The symbolic structure of a construction is gestaltic, such that the lexical items that appear in a construction are assigned specific functions based on the meaning of the construction. Thus, constructional semantics may be idiomatic and typically displays some degree of independence of the lexemes that appear in the construction. In earlier incarnations of construction grammar, constructions were considered to be invariably idiomatic, as exemplified by Goldberg's (1995: 4) definition in which constructions are biconditionally defined by idiomaticity; in Goldberg (2006: 5), idiomaticity, while still a very typical feature of constructions, no longer figures as a defining feature, as constructions are now defined as "LEARNED PAIRINGS OF FORM WITH SEMANTIC OR DISCOURSE FUNCTION" [smallcaps in original]. Similarly, Croft (2005: 274), defines a construction as "an entrenched routine …that is generally used in the speech community ... and involves a pairing of form and meaning". In the constructionist conception of language, the language system is a radial taxonomic network of constructions and subconstructions, based on general principles of information storage in human cognition, and an important tenet is that a lexicon-construction continuum is embraced in which morphological, lexical, and syntactic constructions (and any other type of construction, as it were) are all pairings of form and meaning and only differ in terms of internal complexity rather than belonging to separate modules of language (Goldberg 1995: 7). This is captured by the construction

7 Schmid et al. (2007) use attribute listing tasks in their study of syncretic concepts in Nigerian English, and term listing and sorting is used in Li et al.'s (2004) study of concepts of SHAME in Chinese culture. In an interesting study of small talk at parties in Irish, English and American settings, Schneider (2014) shows that discourse construction tasks can be useful in inferring cultural models of context-bound interaction.

8 My rejection of introspection as an empirical method of inferring cultural models may seem harsh, and maybe it is. However, there are a range of problems associated with language descriptions based purely on the analyst's intuitions about the language in question (and the associated cultural and cognitive structures). One such problem is the fact that the analysts' own intuitions about the language and culture in question – even if the analyst is a native speaker of the language and a member of the community in question – are very unlikely to capture every single aspect of the language and culture in question, thus essentially making introspection-based descriptions mere hypotheses that cannot count as explanations or descriptions as such until they have been empirically tested. This does not mean that introspective data are not scientific: insofar as it is recognized that they are hypotheses, and if they are formulated in such a way that it is clear that they are hypotheses that may later be tested against empirical data, their scientific value is naturally substantial. For more on the problems of introspection in language studies, see McEnery & Wilson (2001: 111).

grammarian's motto: It's constructions all the way down (e.g. Goldberg 2006: 18). While a number of different inheritance principles figure in different versions of construction grammar, the present paper adopts the usage-based model of inheritance in which redundancy, context-specificity, and item-specificity alongside generalizations and very abstract structures are embraced (Goldberg 2006: 12-14).

Described by Jensen (2014a, 2014b, 2014c; see also Fortuin 2013, 2014) within the framework of construction grammar, the [*too* ADJ *to* V]-construction is a scalar adjectival construction whose semantics revolves around an implied force-dynamic relation (Bergen & Binsted 2004) between [*too* ADJ] and [*to* V], as seen in (1)-(6). The construction is formally bipartite, consisting of [*too* ADJ] and a *to*-infinitive, such that the latter postmodifies the adjectival head. *Too* in [*too* ADJ] is a booster type premodifier (Paradis 2000: 149) and construes a very high degree on a SCALE OF ADJNESS imposed upon the element in the ADJ-position; thus, the image schema of SCALE (Johnson 1987: 122) is conventionally associated with the construction. This high degree of ADJNESS serves as the causal element in the underlying force-dynamic relation and either prevents the situation in the *to*-infinitive from happening, via application of the BLOCKAGE image schema (Johnson 1987: 45-46), or enables it to happen, via application of the ENABLEMENT image-schema (Johnson 1987: 47). The function of the PREVENTION type has been described by Fortuin (2013) as an EXCESS function, highlighting that the PREVENTION is triggered by the degree ADJNESS exceeding a maximum limit of appropriateness for the situation expressed by [*to* V]. The two variants are illustrated below, with (7) being an example of the former, and (8) being an example of the latter:

(7) I'm *too depressed to see* straight. (COCA 2011 FICT RedCedarRev)

(8) I am only *too happy to provide* what little help I can. (COCA 2011 FIC Bk:AliceIHaveBeen)

In the present study, we are only interested in the PREVENTION type, and, so, we are focusing on force-dynamic cultural models in which the main force-dynamic relation is that of PREVENTION based on the BLOCKAGE image schema. The reason why our focus is on the PREVENTION type is that, as Jensen's (2014a: 745-746) findings suggest, the PREVENTION type is significantly more frequent than the ENABLEMENT type. Moreover, the EXCESS function of the [*too* ADJ *to* V]-construction has received some attention in the literature, and Fortuin (2013) has found evidence for the EXCESS function of the construction, which makes the construction particularly interesting in relation to its potential interplay with cultural models that draw on the force-dynamics of BLOCKAGE. That is not to say that the ENABLEMENT type is not potentially interesting in relation to cultural models – in fact, the example in (8) could suggest that the ENABLEMENT type may serve to indicate WILLINGNESS TO ASSIST OTHER PEOPLE which is, if not culturally relevant, then at least socially relevant. In this study, however, we are particularly interested in learning if it is possible to infer force-dynamic, from corpus data, cultural models of BLOCKAGE as reflected in American English.

4. Data and method

For this study, we will draw on data from the 464,020,256-word corpus *COCA* (Davies 2014). Consequently, we are dealing with American cultural models. In a corpus-wide search, 19,525 instances of the construction were found. Using Gries (2007), these were subjected to a co-varying collexeme analysis (Gries & Stefanowitsch 2004; Stefanowitsch & Gries 2005), which is a corpus-based collostructional analysis that measures the degree of coattraction between the lexemes in two schematic positions in a construction. In the case of the [*too* ADJ *to* V]-construction, we thus measure the coattraction between ADJ- and V-elements. Covarying collexeme analysis is based on

four input frequencies: the occurrence of the first lexeme in one position in the construction, the occurrence of all other lexemes in the same slot, the occurrence of the second lexeme in the other slot in the construction, and the occurrence of all other lexemes in the other slot of the construction. These are inserted into a 2-by-2 cross-table like this:

Table 1: Covarying collexeme analysis (Stefanowitsch & Gries 2005)

	Lexeme 2 in slot 2	Other lexemes in slot 2	Row totals
Lexeme 1 in slot 1	x	a	x+a
Other lexemes in slot 1	y	b	y+b
Column totals	x+y	a+b	column totals + row totals

The total sum is also run through a Fisher Exact Test or a similar statistical test, yielding a *p*-value, indicating strength of the coattraction of the two lexemes in the construction in question. The degree of coattraction is referred to as collostruction strength (abbreviated 'Coll.strength' in tables in this article). As Stefanowitsch & Gries (2005: 7) point out, using a log-transformed *p*-value has a number of advantages:

> First, the p-value is not an intuitively very easy measure since the most interesting values are only located in the small range of 0.05 to 0 (and many linguists are unfamiliar with the scientific format employed for representing such small numbers). Second, the p-value as such can only represent the strength of the relation, but not its direction, i. e., whether an observed frequency is larger or smaller than the expected one. Third, the log-transformation allows the researcher to correlate collostruction strength with frequencies using linear correlation coefficients …

As a result of these advantages, log-transformed *p*-values allow for somewhat more fine-grained distinctions between the most strongly coattracted items in a construction. Because of this, I have applied log-transformed *p*-values in my covarying collexeme analysis. For a more detailed discussion of the mechanics of covarying collexeme analysis, see Stefanowitsch & Gries (2005: 9-11).

Covarying collexeme analysis produces a ranked list of pairs of coattracted lexemes in the construction, which based on collostruction strength: the higher the score, the stronger the relation of coattraction. In Table 2 on page 137, we see the fifty most strongly coattracted pairs in the construction (10,187 pairs were identified in all).[9] In accordance with the principle of semantic coherence, which states that, "since a word in any slot of a construction must be compatible with the semantics provided by the construction for that slot, there should be an overall coherence among all slots" (Stefanowitsch & Gries 2005: 11), we can assume that coattracted elements in the ADJ- and V-positions stand in force-dynamic relations such that the property expressed by the adjective in a pair has a logical influence on the scenario predicated by the verb, as in *numerous-count*, *heavy-carry*, *dark-see*, *hot-touch*, *excited-sleep*, *stupid-know*, and *excited-sleep*, in which the ADJ-elements have a logically preventive effect on the situations expressed by the V-elements. At an abstract schematic level, such PREVENTION results in what Talmy (2000: 415) calls extended causation of rest, which means that it causes the participants in the scenario of the infinitive clause

9 Cases where the primary verbs (*be*, *have*, *do*) appear in the V-position are excluded in this study. This is because the markup of primary verbs in the corpus is not optimal, since no distinction is made between their auxiliary uses and their lexical uses. This, of course, leaves out some potentially valuable data, but, with proper markup of the primary verbs in the future, this study can easily be replicated and the primary verbs included.

to not act and interact, thus essentially causing non-existence or non-happening of the scenario.

Table 2: Top 50 coattracted collexemes

Rank	ADJ	V	Coll.strength	Rank	ADJ	V	Coll.strength
1	early	tell	1528.38435698167	26	heavy	carry	124.3755261225
2	big	fail	1402.67780068168	27	early	start	117.768042298989
3	early	say	673.749651472347	28	bright	look	117.390507556761
4	dark	see	633.712280147262	29	early	judge	115.433514626678
5	young	remember	531.616708933419	30	quick	dismiss	114.717496452921
6	good	pass	472.135275027497	31	drunk	drive	110.023133085789
7	young	understand	382.367430930175	32	poor	buy	109.593957847202
8	late	save	347.581214895259	33	poor	pay	107.296055875141
9	poor	afford	298.953845988046	34	young	die	104.082372063773
10	numerous	mention	257.678226584586	35	nervous	eat	101.74693979917
11	hot	handle	252.439074720694	36	willing	compromise	98.2819850184592
12	young	know	236.34785774602	37	happy	oblige	96.7323055289143
13	numerous	list	196.972148943439	38	proud	beg	94.4930655943287
14	numerous	count	191.258628641587	39	good	last	93.4881306758162
15	late	stop	182.127970563589	40	late	prevent	90.9142499207819
16	big	fit	160.696104391523	41	early	declare	89.3289490607868
17	long	wait	157.281159244082	42	proud	admit	89.3281331956656
18	late	change	148.375173429508	43	busy	hate	85.9966045271147
19	heavy	lift	142.098947417316	44	stupid	know	85.8915891668518
20	early	predict	139.519518681335	45	early	draw	85.8044242609496
21	embarrassed	ask	136.584536119856	46	old	play	84.8966595204195
22	hot	touch	136.105562887376	47	large	fit	84.6157631272607
23	shy	ask	132.647426404279	48	busy	notice	84.3978141577957
24	early	determine	129.615268822683	49	excited	sleep	83.1571745295513
25	complicated	explain	125.320990839008	50	late	start	82.4649826421847

We are interested in pairs with the force-dynamic relation of PREVENTION. In the following, we will focus on three particular instantiations of the construction – namely, [*too young to* V], [*too proud to* V], and [*too macho to* V]. The adjectives in these particular instantiations are likely to be tied in with semantic concepts that are intertwined with cultural cognition, which is why these three instantiations are particularly suitable for an exploratory study such as the one at hand. *Young* relates to AGE, and we can expect different age ranges to be associated with, and dissociated from, a variety of activities and behaviors that are considered appropriate, or inappropriate, for the specific age ranges. In this case, of course, we focus on YOUNG AGE, relative though this concept is. *Proud* and *macho* are adjectives that express attributes derived from patterns of social behavior and are thus likely to be tied in with stereotyped images of individuals that display such behaviors. Such stereotypes are intersubjectively shared in the communities in which they exist, and the community members use the stereotypes to make sense of those individuals' behaviors. With this in mind, we can hypothesize that there may be patterns of attraction among the verbs that are coattracted to each of these realizations of the ADJ-position, which, given the force-dynamics of PREVENTION found in the constructional semantics, may provide us with insights into culturally perceived behavioral patterns captured by the cultural models associated with the attributes expressed by the adjectival elements.

Concluding this section is a methodological disclaimer. Our focus is on American culture only

as we are primarily interested in seeing whether corpus data and methodology are applicable in the study of cultural models, but it should be mentioned that a contrastive study which takes into account uses of the [*too* ADJ *to* V]-construction is different varieties of English, or which compares [*too* ADJ *to* V] to a similar construction in a different language, would enable us to more precisely evaluate the culture-specificity of the underlying cognitive models in question. In the present paper, we are primarily interested in seeing to which extent such models emerge from resulting findings of a covarying collexeme analysis. Among the next 'natural steps' in a more fully fledged investigation of the interaction between the construction and cultural models would be systematic contrastive studies.

5. Cultural models of AGE

Our main assumption about [*too young to* V] is that the discursive behavior of this instantiation of [*too* ADJ *to* V] as documented in *COCA* may reflect an underlying cultural model of AGE. The table on page 139 provides a list of lexemes attracted to *young* in the construction. Not surprisingly, *young* occurs with *drink*, *drive*, and *vote*, reflecting underlying cultural patterns of behavior pertaining to AGE, or rather restrictions thereon imposed by legislation which have arguably been absorbed by the "weltanschauung", to use Rice's (1980: 154) diction, of American culture. All three pairs reflect situations in which a MINIMUM AGE is imposed upon the activity expressed by the V-lexeme, and *too young* construes a degree of YOUNGNESS that exceeds the MINIMUM AGE specified by the legal restrictions in question, thus preventing the activity from taking place.

Below is an illustrative example of each pair:

(9) He was old enough to vote and kill and die, which made him a man. He was *too young to drink*, even beer, which made him a boy. (COCA 2008 FIC Bk:NothingLose)

(10) Lance Colton couldn't be more proud of the battered 68 Camaro that he is still *too young to drive*. Restoring it was a dream he shared with his dad, that kept the two tinkering in the garage from morning until night. (COCA 2004 SPOK CBS_Rather)

(11) He's *too young to vote*, let alone run for office. But David Baker, 17, has already served two terms in Congress in Washington, D.C. – as a page for the House of Representatives and the Senate. (COCA 2000 MAG BoysLife)

Note that (11) specifies a degree of YOUNGNESS that is so high that voting is prevented, in that *17* occurs as a specification of David Baker's age. Age specifications form another discursive element that could be investigated in conjunction with *young*-pairs in the [*too* ADJ *to* V]-construction, and a more detailed qualitative analysis of the expanded co-text[10] with a view to identifying age specifications and maybe even operationalizing them would be likely to produce valuable insights into cultural models of AGE. I will not follow up on this in the present article, as it would amount to an investigation far beyond the scope of the article.

While there are several indicators of various cultural perceptions pertaining to AGE, what strikes me is that *young* seems to attract verbs of COGNITION (we include verbs of EVALUATION in this category), such as *know*, *remember*, *understand*, *recall*, *appreciate*, *realize*, *comprehend*, *learn*, *recollect*, *question*, *grasp*, *evaluate*, *process*, and *recognize*. This seems to suggest that there is an underlying perception of AGE and INTELLECT in American culture in which YOUNG AGE has a negative impact on INTELLECTUAL CAPACITY.

10 Co-text is defined by Catford (1965: 31fn2) as "items in the text which accompany the item under discussion".

Table 3: V-lexemes coattracted to *young*

Rank	V-lexeme	Coll.strength	Rank	V-lexeme	Coll.strength	Rank	V-lexeme	Coll.strength
5	remember	531.6167089334	6400	smell	3.3780512831	8226	handle	1.076894277
7	understand	382.3674309302	6401	visualize	3.3780512831	8229	notice	1.0736879882
12	know	236.347857746	6467	question	3.2651856734	8330	serve	0.944795401
34	die	104.0823720638	6551	enter	3.1738895519	8333	hear	0.9415811643
91	vote	49.9399053694	6627	grasp	3.0536859828	8357	choose	0.9063051699
127	recall	38.8795405744	6733	obtain	2.8912259292	8358	earn	0.9063051699
192	retire	29.9369724328	7031	decide	2.5675918774	8365	control	0.8900141523
251	appreciate	23.4409880659	7032	settle	2.5675918774	8549	apologize	0.7190854436
268	drive	22.6840945836	7068	enjoy	2.5628742408	8578	play	0.6887799849
339	realize	20.5029210874	7150	boast	2.4310032725	8655	follow	0.5827118171
350	enlist	19.9882055431	7151	converse	2.4310032725	8675	benefit	0.5679099221
434	hate	18.7786295508	7152	plead	2.4310032725	8676	sign	0.5679099221
445	consent	18.1596215648	7153	preach	2.4310032725	8677	study	0.5679099221
505	drink	17.6524544154	7154	ruin	2.4310032725	8707	walk	0.5404874164
538	get	17.1345523011	7155	secure	2.4310032725	8778	worry	0.4668891661
1464	feel	12.0131239135	7156	smoke	2.4310032725	8793	bury	0.4447130294
1584	comprehend	11.6175325598	7277	evaluate	2.2845753382	8794	indulge	0.4447130294
2036	marry	10.2936192564	7574	exhibit	1.8508606252	8795	quit	0.4447130294
2065	learn	10.2346036097	7575	hike	1.8508606252	8911	engage	0.3438684324
2528	fight	9.3820419832	7576	resent	1.8508606252	9061	consider	0.2175255239
2969	socialize	8.3846589982	7613	dance	1.8135782788	9077	commit	0.1939347117
3097	shave	8.0708526927	7614	receive	1.8135782788	9078	lose	0.19211283
3858	participate	6.9558086716	7615	rule	1.8135782788	9079	win	0.19211283
3974	dial	6.7579123918	7862	go	1.5115509712	9085	travel	0.1865073433
3975	rent	6.7579123918	7913	deserve	1.4449762703	9115	write	0.1582728209
4397	own	6.06271523	7914	like	1.4449762703	9147	begin	0.132706061
4407	baby-sit	6.0511969511	7915	pin	1.4449762703	9212	set	0.095974358
4408	dominate	6.0511969511	7916	process	1.4449762703	9266	claim	0.062058303
4409	lean	6.0511969511	7917	row	1.4449762703	9282	recognize	0.0531247572
4410	meddle	6.0511969511	7918	shape	1.4449762703	9314	listen	0.0366551811
4411	mind	6.0511969511	7919	shoulder	1.4449762703	9315	apply	0.0364982453
4412	re-create	6.0511969511	7920	smile	1.4449762703	9316	dig	0.0364982453
4413	recollect	6.0511969511	7921	wield	1.4449762703	9368	run	0.0185509689
4781	qualify	5.452383851	7926	absorb	1.4390017639	9401	use	0.0097772519
5112	join	5.0493701814	7927	visit	1.4390017639	9420	account	0.0066735003
5259	reproduce	4.8636271275	8027	work	1.3135004073	9421	cross	0.0066735003
6058	care	3.8036674188	8041	read	1.304006599	9422	shoot	0.0066735003
6131	testify	3.7031630195	8088	attend	1.2281816852	9423	compete	0.0061908425
6397	contend	3.3780512831	8160	chew	1.1417299471	9456	need	0.0008988344
6398	separate	3.3780512831	8161	haul	1.1417299471	9466	leave	0.0004815191
6399	shine	3.3780512831	8182	face	1.1273804603			

Consider the following examples of the [*too young to* V$^{\text{COGNITIVE}}$]-instantiation of the construction:

(12) a. At her feet, her 6-year-old daughter, Janelle, and 4-year-old son, James, chased each other in a game of tag. Alexis gazed fondly at them. They are still *too young to know* exactly what Mommy did for a living, she said – and she wants to keep it that way. (COCA 2011 MAG SanFranChron)
b. Asked why the youths had been acquitted of attempted murder despite the jogger's near fatal injuries on the night of April 19, 1989, one juror, Charles Nestorick, said: "it was a very, very painful decision." "It was very dark in the park and we believed that they didn't realize how much damage they were doing," he said. "They were *too young to know*." Another juror, Rafael Mirandez, said, "They had knives and didn't use them." A third, Ronald Gold, said he had resisted convicting Mr. McCray of rape until yesterday. He changed his mind, he said, after watching the youth's videotaped confession played one last time. (COCA 1990 NEWS NYTimes)
c. At 14, Jamie Fleming should be *too young to know* about guns or any of the specific details of violence and perversity that fill his mind – and, he says, his memory. (COCA 1993 SPOK CBS_EyeToEye)

(13) a. The hardest part of the process for Leake was the resistance she faced from a 3-year-old and a 5-year-old who were *too young to understand* why Froot Loops were suddenly forbidden (COCA 2011 MAG Prevention)
b. "My compliments to the host," I said, hoping she wasn't *too young to understand* irony.But she shoved the bottle back to me, her mask swiveling to the left. "I can't take that,"she said, her voice carrying more than a trace of alarm. "Someone might think you're trying to bribe me." (COCA 2005 FIC Analog)
c. "They can do things as a team sometimes, but sometimes they can't. I am very, verydisappointed in them. Know how many games I've lost when I've had a double-digit lead like that one." "Three," is the guess. "Two," he declares. "Just two. I was 49-1 until Sunday. And lemme' tell you something else: I'm getting too old to lose. These guys I got here, a lot of 'em are *too young to understand* what I mean. All I want to do is get my team to perform up to how I think they're capable of performing. I don't care what anyone else thinks. OK? It's what I think." (COCA 1998 NEWS Chicago)

(14) a. Of course the juvenile justice system does occasionally deal with children *too young to appreciate* the moral dimensions or real-world consequences of their behavior... (COCA 1998 ACAD CATOJournal)
b. "I don't think children are *too young to appreciate* what that sunken ship represents," he told me. (COCA 1991 MAG Smithsonian)

(15) a. AT FIFTEEN, BILL JOHNSON was really *too young to comprehend* the danger of frostbite. (COCA 1997 MAG FieldStream)
b. At ten, I was much *too young to comprehend* the significance of anything my grandfather said, but I liked to hear him talk. (COCA 1994 FIC AfricanAmericanReview)

(16) Everything happens for God’s good reason is the cliché my mother has drilled in my head since I was old enough to ask "Why?" – *too young to question* why she really didn’t seem to believe this was true regarding her and my father. (COCA 2010 FIC Bk:PowderNecklace)

(17) And he wasn't lying when he said he wasn't afraid, even for a thousandth of a second, that his father wouldn't hit the apple. It was later on, when he grew up, that he began to think back and ask the questions his son now asked him. At the time of the heroic deed he was *too young to grasp* the real danger implicit in that challenge, but his father was no child. How could he have imperiled his son's life without shaking at all? (COCA 2011 FIC MassachRev)

(18) He gave Marcado peppermints, rubber balls, and dolls with eyelashes, his dark sad eyes searching her face in a way she was *too young to evaluate*, while Elsine colored black hearts and sucked on stones. (COCA 2003 FIC FantasySciFi)

The examples above show that the force-dynamic relation of YOUNG AGE BLOCKING INTELLECTUAL CAPACITY is applied in a myriad of different ways, depending on the co-text and the concepts activated in the current discourse space.[11] Thus, the [*too young to* $V^{COGNITIVE}$]-instantiation of [*too* ADJ *to* V] enters into mutually specificational relationships with other elements in the texts, such that *young* is specified by the co-text (or by implicatures generated by the co-text), and a force-dynamic relation of BLOCKAGE is set up between *young* and the proposition expressed by the infinitive clause. Given that canonical discourse involves thematic coherence, we can assume that there is semantic coherence throughout the entire stretch of discourse that relates to the instance of [*too young to* $V^{COGNITIVE}$] in question, such that the surrounding discursive context draws on and, possibly, elaborates on the cultural model associated with the construction, as well as any other conceptual content evoked throughout the discourse. For example, a formulation like **At 51, he was too young to understand what his mother did for a living* would be semantically odd, while *At 51, he was too young to understand the problems that senior citizens face daily* would be semantically acceptable.

Our analysis could be expanded by looking at coattraction patterns with other ADJ-lexemes. We will restrict ourselves to the most obvious candidate – namely, *old*. Table 4 on page 142 lists the fifty V-lexemes that are the most strongly coattracted to *old* in the construction. Several of the V-lexemes on the list seem to reflect relations in which a high degree of OLDNESS blocks the situation predicated by the V-lexeme. For instance *too old to enjoy* indicates that there are degrees on the scale of OLDNESS that prevent the described individual from enjoying certain situations. Of course, exactly what type of situation this is applied to is specified in the actual usage-event. In the instances of *too old to enjoy* found in *COCA*, the OBJECT OF ENJOYMENT ranges from money over a bottle of wine to life itself. Likewise, *too old to hire* and *too old to work* indicate a perception in American culture that there is a maximum age limit for when a person is considered capable of working and thus worthy of appointing or hiring. A final example is *too old to cry* which reflects a cultural perception that there is a maximum age at which the act of crying is socially acceptable. Below are illustrative examples:

(19) "I thought choosing Plan A was a little risky, but I also thought it might be better to get some of the money in my younger years rather than when I'm *too old to enjoy* it," he said. (COCA 1998 NEW NYTimes)

(20) "I'm in a certain group that's almost *too old to hire*," says Dalke, who lives in a one bedroom apartment in Golden. "Being over 50 in these times, it's hard to land something." (COCA 2011 NEWS Denver)

11 The current discourse space is defined by Langacker (2001: 144) as "the mental space comprising those elements and relations construed as being shared by the speaker and hearer as a basis for communication at a given moment in the flow of discourse."

(21) "I'll be 16 next spring," he pleaded. Dowd buttoned his sheepskin coat." It'd be best if you stayed here. Just in case word comes in." The walls closed around him like an avalanche. He felt *too old to cry*, but angry tears glazed his eyes. "That's my dad out there." No one said anything. (COCA 1990 MAG BoysLife)

Note that, as seen in (19)-(21), the degree of OLDNESS that triggers BLOCKAGE of the scenario differs depending on the scenario itself. In (20), we see that the AGE that prevents hireability is fifty, while the AGE that prevents crying, or at least makes it socially undesired, is fifteen or higher.

Table 4: Top 50 V-lexemes coattracted to *old*

Rank	V-lexeme	Coll.strength	Rank	V-lexeme	Coll.strength
83	learn	54.4171989490659	3727	pat	7.16647484447686
152	work	34.6534315861253	3728	patrol	7.16647484447686
236	run	25.1595935753305	3729	practise	7.16647484447686
382	want	18.9923466719583	3730	quarrel	7.16647484447686
443	cry	18.4236796760803	3731	reheat	7.16647484447686
494	chase	17.8211178388252	3732	remarry	7.16647484447686
547	become	16.7732421331107	3733	revert	7.16647484447686
664	go	15.9798067870398	3734	slay	7.16647484447686
908	race	14.3365372899232	3735	transplant	7.16647484447686
909	rock	14.3365372899232	3736	trick	7.16647484447686
1418	adopt	12.1739109892923	4021	drive	6.69520919004453
1916	stoop	10.5736579320413	4074	lose	6.58395010465351
1973	benefit	10.3896020702044	4115	climb	6.53481326097242
2493	fall	9.44295759619808	4136	take	6.51548488914309
2495	start	9.44006949106636	4788	continue	5.43717494832891
2673	enjoy	9.09557076431138	4891	keep	5.28105683435573
2742	duck	8.90377406922286	5326	obtain	4.77821581144005
2767	hunt	8.83378139126597	5550	bounce	4.45019421739204
3035	fly	8.2423876884787	5551	braid	4.45019421739204
3121	hire	8.02604968392528	5552	cash	4.45019421739204
3526	change	7.36852114048533	5553	cheat	4.45019421739204
3584	qualify	7.27654857564505	5554	cuddle	4.45019421739204
3724	envy	7.16647484447686	5555	diss	4.45019421739204
3725	insert	7.16647484447686	5556	foster	4.45019421739204
3726	journey	7.16647484447686	5557	leap	4.45019421739204

From this covarying collexeme analysis emerges a complex cultural model of AGE, or perhaps a complex network of cultural models of AGE, in which AGE is a scale, and along that scale are points which serve as limits of possibility of situations such that degrees of AGE beyond this point result in BLOCKAGE of the situation in question from occurring. We even see how speakers, participants, and characters draw on the model to make sense of other people's behavior and in decision-making,

using the [*too* ADJ *to* V]-construction in their verbal argumentations.

Granted, this model, or network of models, has only been partially inferred from our corpus-study, but I would argue that a more detailed study would result in a deeper understanding of cultural models of AGE and force-dynamics, and, combined with methods used in cognitive anthropology, such a corpus-study would provide us with invaluable insights into the perception of AGE and the constraints it is held to impose upon people within American culture.

6. Models of PRIDE

PRIDE is typically considered an individual character trait and a hubristic emotion (Cheng et al. 2010),[12] but it is arguably tied in with socio-cultural values. It is essentially a positive emotion applied in, or perhaps resulting from, the evaluation of achievements or attributes; for instance, a university student might be proud having finished his or her first year at university or a hand model might be proud of her healthy-looking nails. Thus, PRIDE is a psychological phenomenon. However, as with SHAME (Li et al. 2004), the acts and features that make one feel proud are often associated with social value and socially perceived as positive assets or indicators of a strong or healthy character, while acts and features that are not socially desirable are considered indicative of weakness in character. In other words, PRIDE is also associated with perceptions of social status (Cheng et al. 2010), which is arguably a cultural phenomenon, since what ensures social status depends on the worldview of the community in question. Loss of social status is arguably intimately related to loss of face, as defined by Goffman (1967). Three integral aspects of a cultural model of PRIDE should thus be situations that enable one to gain face, situations that cause one to lose face, and the 'instinct' to avoid situations the cause one to lose face. In other words, a high degree of PRIDE may prevent one doing things that are threatening to one's own face.

Given the force-dynamic semantics of [*too* ADJ *to* V], we can assume that instances of the construction in which *proud* figures as the ADJ-element may provide us with insight into the actions and states considered incompatible with PRIDE in American culture. In Table 5 on 144 is a list of the V-lexemes coattracted to pride in the construction.

Lexemes such as *beg*, *admit*, *ask*, *apologize*, *flee*, *wince*, and *plead* are among the coattracted V-lexemes. This suggests that among the situations they conventionally predicate we find situations that are incompatible with a high degree of PRIDE and thus likely to be face-threatening. Below are illustrative examples of each of these verbs in the V-position:

(22) She spoke almost politely, as if she didn't want to intrude, but she repeated the same phrases over and over, *too proud to beg* but desperate to be heard: "I'm cold. Can someone bring me a blanket? This room is so cold." (COCA 2002 FIC Bk:LivingBlood)

(23) And so we go about our business much *too proud to admit* defeat and much too blunt to gain victory. (COCA 1999 SPOK NPR_TalkNation)

(24) Steve Peck, *too proud to ask* for help. (COCA 2011 SPOK NPR_TalkNat)

(25) "If I'm ready to talk after a fight, but *too proud to apologize*, I make my Reconciliation Soup. When he smells that cooking, he knows I'm sorry," she says. (COCA 1998 NEWS WashPost)

(26) They came forward, swinging their clubs, and Bearwald gripped his sword, *too proud to flee*. (COCA 1992 FIC BkSF:WhenFiveMoons)

12 For an overview of pride studies, see Sullivan (2007).

Table 5: V-lexemes coattracted to *proud*

Rank	V-lexeme	Coll.strength	Rank	V-lexeme	Coll.strength
38	beg	94.4930655943287	5974	condemn	3.90114325274183
42	admit	89.3281331956656	5975	screw	3.90114325274183
100	ask	45.8731009181586	6175	apologize	3.63142890651582
109	accept	43.0472366638223	6176	bend	3.63142890651582
181	take	30.83078647397	6177	recount	3.63142890651582
197	whitewash	28.6588646057626	6178	steal	3.63142890651582
341	acknowledge	20.4413934448906	6529	flee	3.19205419572279
378	befriend	19.0938416182487	6647	engage	3.00870192115055
725	resign	15.2916287025719	6648	pretend	3.00870192115055
776	let	15.1228397154788	7073	express	2.55672656977846
2445	ape	9.54091138496496	7157	set	2.43073359696925
2446	bow	9.54091138496496	7229	show	2.34177390726771
2447	consort	9.54091138496496	7320	approach	2.20619422933044
2448	fancy	9.54091138496496	7577	learn	1.84748148164786
2449	humble	9.54091138496496	7988	bring	1.37126883977579
2450	nuzzle	9.54091138496496	8224	pick	1.07851603413856
2451	request	9.54091138496496	8281	listen	0.996541062881942
2452	respect	9.54091138496496	8282	ride	0.996541062881942
2453	truckle	9.54091138496496	8374	permit	0.885298154974608
3956	fight	6.79859610097965	8375	return	0.885298154974608
3963	copy	6.78529720010197	8485	cry	0.786245922911548
3964	recruit	6.78529720010197	8606	consider	0.64377913404494
3965	rehearse	6.78529720010197	8796	respond	0.443070996840437
3966	wince	6.78529720010197	8938	wait	0.324675522890184
4590	plead	5.75577632312191	9084	try	0.187797562757215
4591	stoop	5.75577632312191	9157	call	0.125139537308178
4906	say	5.25433703914281	9269	carry	0.0614379226094846
5076	borrow	5.0931564597768	9366	go	0.0193615199681514
5077	demand	5.0931564597768	9380	turn	0.0147560853080088
5436	remind	4.60479053854155	9446	allow	0.00160800022097272
5746	obey	4.219058298182	9447	notice	0.00160800022097272
5747	thank	4.219058298182	9484	come	2.83369132891079e-05
5862	share	4.03118859742546			

(27) For such a self-confident, strong man, Mama says, our Papa's feelings are hurt easily, though he is *too proud to wince*, he only squints. (COCA 1990 FIC Bk:StainlessSteel)

(28) She has the eyes of an orphan *too proud to plead*, too desperate to reproach. (COCA 2004

MAG TIME)

In all examples, (27) perhaps being less obvious due to its metaphorical nature, the infinitive clause expresses a situation in which the primary participant loses face. In particular, we are dealing with activities that might be considered reflective of weakness, such as begging, asking for help, fleeing from danger, and metaphorically wincing in the face of emotional pain. Seeing that loss of face also results in loss of social status to various extents, it makes sense that a high degree of PRIDE should BLOCK acts that compromise one's face.

Of course, we should remind ourselves that the semantics of both lexemes and syntactic structures is dependent on the discursive contexts in which they appear, and that interlocutors construe them online in discourse. For instance, what makes the situation of asking considerably face-threatening in (24) is the discursive context *for help*. However, in a usage-based perspective, contextual patterns are stored with linguistic units, and the fact that *ask* is coattracted to proud in the construction could suggest that one conventional sense of the verb does include concepts of potential loss of face.

Interestingly, *thank* also appears to be coattracted to *proud*, which seems odd since thanking ought to be a socially desirable act. Let us have a closer look at that. In fact, there is only one example of *thank* appearing with proud in [*too* ADJ *to* V]:

(29) "It's the date of FDR's death," he said, "and it's a date we think every American should know. The audience will want you to hit it right on the head – no thirty-day leeway. Listen, you do well, there's no reason you couldn't win second-prize money, O.K.? See you back here no later than quarter to eight." I was not *too proud to thank* him, and as I left for the back-issue store, I thought over what I'd been told. (COCA 1995 MAG AmHeritage)

It is not inconceivable that there are situations where thanking can be face-threatening, in particular if what is being thanked for is in itself face-threatening.[13] This may be the case of the interaction recounted by the narrator in (29) prior to the occurrence of *too proud to thank* (note also that *too proud to thank* is negated),[14] in which the other interlocutor seems to be in a more powerful position than the narrator.

In our discussion of coattracted lexemes of proud in [*too* ADJ *to* V], we have been able to infer inklings of what seems to be the underlying understanding of both the concept of PRIDE in American culture as well as an idea of what constitutes face-threatening situations incompatible with PRIDE. As with [*too young to* V], the cultural model of PRIDE appears to be a somewhat complex network of models, and a more detailed corpus-study of verbal behavior pertaining to the concept of PRIDE would probably grant us a more detailed picture.

7. Models of MACHISMO

MACHISMO is, to some extent, related to PRIDE, as it may be defined as extreme masculinity reflected in patterns of behavior and strong male pride. Although often associated with Latino culture (e.g.

13 Indeed, Eisenstein & Bodman (1986) categorize expressions of gratitude as face-threatening acts.

14 There were no examples in the corpus in which *too proud to thank* was not negated. However, for illustrative purposes, here is an example from an online top 10 list of gifts for men, which quite clearly draws on a model of male pride:

> Garmin nüvi 1450LMT 5-Inch Portable GPS Navigator with Lifetime Map & Traffic Updates. If your guy is the type that never likes to ask for directions, save him the embarrassment and get him one of these. He might be *too proud to thank* you for it but he will appreciate you for it on the inside.

(source: http://www.craftyshopper.com/top-10-best-gifts-for-men/)

Anders 1993), the concept does exist in Anglophone cultures, which is reflected by the adoption of the word *macho* into the English language.

The purpose of this case study is a bit different from the two previous ones. In the previous studies, there were numerous instances of *young* and *proud* in the construction, and we saw indications of patterned ranges of coattracted verbs. Our corpus-wide study of [*too* ADJ *to* V] in *COCA* shows that, although not common (it does not even appear in Table 2), *macho* does appear in the construction. This would suggest that there is a cultural conception of what constitutes macho behavior in American culture. Although the number of instances of *macho* in the construction is not particularly high, they can still provide some insight into the cultural perception of force-dynamic aspects of MACHISMO. In this particular case study, then, we will explore the applicability of covarying collexeme analysis in cases of scarcity of data. While there are only few instances, the statistics of the method are powerful enough to provide us with a material for hypotheses that may be tested against larger data sets.

Below is a list of V-lexemes coattracted to *macho* in *COCA*:

Table 6: V-lexemes coattracted to *macho*

Rank	V-lexeme	Coll.strength
2399	ask	9.65380669906567
3238	back	7.76968391833239
4231	listen	6.36958801790785
4399	cry	6.06217644204677
4777	wear	5.4573854448748
5935	let	3.94853481675146
7618	see	1.80919245237497
7737	get	1.67625940042516

Perhaps not surprisingly, *cry* and *ask* appear on the list – both lexemes were also associated with *proud* in the construction – and a look at the co-text of the instances in which these verbs co-occur with *macho* in the construction suggest that prevention of loss of face and social status is associated with MACHISMO:

(30) He wasn't saying anything, and he's *too macho to cry* in public, but I knew him. (COCA 2009 FIC Bk:MuchoMojoHapLeonard)

(31) a. Andrew also knows the VA, when properly equipped, can really make a difference with PTSD. And now that he's recovering, he's trying to spread the word that you can never be *too macho to ask* for help. (COCA 2007 SPOK CBS_Early)
b. lf you hadn't been *too macho to ask* for directions, we wouldn't have missed the wedding! (COCA 1998 MAG Cosmopolitan)

In (30), the high degree of MACHISMO expressed in the utterance is construed as preventing the situation of the person described as macho crying in public. Crying in public is an act that reveals vulnerability and can potentially threaten one's face severely. In particular, if crying is considered a typically feminine or unmanly activity (e.g. Vogel et al. 2011: 368-369), it is obviously at odds with perceived masculine values and macho behavior. The two examples in (31) are similar to (24) in the sense that asking for help may be seen as a sign of weakness and inability to solve problems

oneself, which is at odds with both PRIDE and MACHISMO. The utterance in (31a) is particularly interesting because *too macho to ask for help* is negated, and it is set against the background of military culture, which is arguably a hyper masculine one, which may be at odds with the highly emotional vulnerability of veterans who suffer from PTSD. Indeed, the corpus data do indicate that emotionality is at odds with MACHISMO:

(32) The college kids fall into two camps: those who worry about skin cancer, and those who are *too macho to let on*, even if they do. (COCA 2009 FIC Analog)

(33) "Your woman has probably been trying to tell you for 10 years how to be a better father or husband, but you've been *too macho to listen*," says Real. (COCA 2003 MAG Prevention)

In these two examples, high degrees of MACHISMO are construed as preventive of admission of health worries (32) and of marital communication. In (35) below, housework is considered to be incompatible with MACHISMO, probably because housework is traditionally associated with women:

(34) You see, that's because I'm not *too macho to get down and dirty*, and I help out with the housework. (COCA 1993 SPOK Ind_Geraldo)

Finally, in the following examples, MACHISMO is associated with unreasonable stubbornness:

(35) A popular inference is that Armstrong might have been able to head this off if he wasn't too bullheaded, *too macho to see* a doctor. (COCA 1997 MAG Bicycling)

(36) Or maybe a "nut," she says, who loves the coat but doesn't understand its value, and a "nut boyfriend" who is *too macho to back out* of buying it when he learns the price. (COCA 2000 MAG Bazaar)

Due to the scarcity of instances of *macho* in [*too* ADJ *to* V] in *COCA*, we can obviously not make any general conclusions about a cultural model of MACHISMO (which was not the purpose in this particular case). However, I would argue that the examples listed above do reveal a number of aspects which may serve as elements in an empirically based hypothesis about MACHISMO as a cultural model. Firstly, the examples suggest – not surprisingly – that a high degree of MACHISMO is at odds with emotionality, vulnerability, face-compromising situations, and traditionally feminine chores. Secondly, they indicate that MACHISMO is generally considered a negative type of masculinity in American culture and associated with unreasonable and non-constructive behavior, which is particularly prevalent in examples (31a), (32)-(33), and (35)-(36). These aspects could be operationalized and thus tested against various types of data in a large scale analysis.

6. Concluding remarks

Cultural models are intersubjectively shared cognitive models in a community. They guide the members' understanding of the world and are reflected in their behavior. Consequently, cultural models may also be inferred and reconstructed via observation of the behavior of the members of the community in question. Cognitive anthropologists and other cognitive scientists, such as cognitive linguists and cognitive psychologists with an interest in culture, have thus developed a number of methods to aid them in inferring cultural models from verbal behavior. Most of these set up focused and controlled noise-free environments in which verbal behavior-priming experiments are conducted. Among such methods are focused interviews, questionnaires, and different ranking,

listing, and sorting tasks. These are, understood broadly, essentially laboratory settings in which artificial verbal behavior is triggered. Such experiments are extremely useful in identifying underlying cultural models (and other cognitive models), and one of their main advantages is that they produce only a very small amount of data noise, if any. However, they do not enable the analyst to observe the interaction between verbal behavior and cultural models in naturally occurring discourse. At the end of the day, natural discourse is the natural setting, so to speak, of this interplay, and ignoring it is likely to result in interesting and potentially important data being left out.

Corpus data and methodology are designed to document naturally occurring language in more or less naturalistic settings, noisy though they are. Thus, we can assume that corpus data and methodology can be useful in gaining an understanding of the interplay between cultural models and verbal behavior and also as a means of inferring cultural models from verbal behavior, defined in this article as covering both speech and writing. Stefanowitsch's (2004) analysis of cultural metaphors of HAPPINESS in German and English and, more indirectly, Ooi's (2000) study of collocations in Asian varieties of English suggest that lexical analysis of corpus-data may reveal underlying cultural concepts. Likewise, Gries & Stefanowitsch (2004) show that cultural models may emerge in the analysis of constructional phenomena in corpora. The important take-home lesson from Gries & Stefanowitsch (2004) is that constructional semantics, just like lexical semantics, may link up with and thus serve as a vehicle for cultural models. Consequently, the discursive behavior of constructions in a corpus may also be indicative of underlying cultural models.

The present article has investigated the extent to which the discursive behavior of the [*too* ADJ *to* V]-construction, as described in Jensen (2014a, 2014b, 2014c; see also Fortuin 2013, 2014), may be said to be reflective of cultural models. The construction is characterized by an implicit relation of force-dynamics, such that the [*too* ADJ]-element is construed as PREVENTING the scenario predicated by the [*to* V]-element. Thus, looking at the interaction between lexemes in the ADJ- and V-positions via the method of covarying collexeme analysis is helpful in identifying culturally filtered force-dynamic relations of prevention (and, of course, cognitively universal ones, such as DARKNESS PREVENTING SEEING). Focusing on the following instantiations [*too young to* V], [*too proud to* V], and [*too macho to* V], we were able to identify patterns of attraction within the three adjectives' respective ranges of coattracted verbs in the construction. We found that *young* tends to coattract verbs of cognition and evaluation, suggesting a cultural perception of young age preventing, or at least diminishing, efficient cognitive activities. *Proud* and *macho* both relate to cultural-psychological states and their engenderment in the behavior of people whose personality they are parts of. Analyzing the verbs that they coattract in the *COCA* revealed a number of situations that, in the American cultural perception of proud and macho individuals, appear to be face-threatening to such individuals and are thus prevented by high degrees of PRIDE and MACHISMO.

The present study suggests that it is possible to infer aspects of force-dynamic cultural models from the ranges of verbs coattracted to *young* (and *old*), *proud*, and *macho* in the [*too* ADJ *to* V]-construction, and consequently from the discursive behavior of the construction itself. Of course, the present study has had a quite limited scope, as our focus has been on the BLOCKAGE-involving PREVENTION subtype of the construction and not the ENABLEMENT subtype. Moreover, we have only looked at blockage-based relations in three cultural domains – namely, AGE, PRIDE, and MACHISMO – so this study cannot be said to be an exhaustive investigation of the cognitive-cultural implications of the [*too* ADJ *to* V]-construction. However, this exploratory corpus-based study has arguably enabled us to at least partially infer semantic relations based on BLOCKAGE that are very likely to be part of cultural models. Thus, corpus data and methodology, here represented by *COCA* and covarying collexeme analysis, are useful in the inferring of cultural models from naturalistic verbal behavior. Of course, in order to specify more precisely the extent to which these relations of

blockage are culture-specific, a comparative study would be required which compares the discursive behavior of the construction in American English to its behavior in other varieties of English or which compares the construction to a corresponding construction in a different language. Such a study would be extremely interesting in the perspective of cognitive linguistics, cognitive anthropology, and intercultural communication studies. While this study has shown the potential value of corpus data and methodology as a way to analyze the interplay between verbal behavior and cultural models, corpus data and methodology alone will not enable us to fully infer cultural models in their entirety.

Corpus-based analysis of the discursive behavior of constructions and provides us with an empirical means to partially infer cultural models from verbal behavior. Arguably, corpus data and methodology would contribute importantly to cognitive scientists' endeavor in identifying cultural models if deployed in a triangulatory framework alongside the experimental methods already used in cognitive anthropology, cognitive psychology, and cognitive linguistics.

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