



ELSEVIER

Contents lists available at [SciVerse ScienceDirect](http://SciVerse.Sciencedirect.com)

Language & Communication

journal homepage: www.elsevier.com/locate/langcom

Greatness in the Math Corps family: Integrating ethnographic, corpus, and cognitive approaches to a cultural model



Stephen Chrisomalis*

Dept. of Anthropology, Wayne State University, 3054 F/AB, 656 Reuther Mall, Detroit, MI 48202, United States

ARTICLE INFO

Article history:

Keywords:

Conceptual metaphor
 Corpus linguistics
 Mathematics education
 Math Corps
 Motivational discourse
 American English

ABSTRACT

This study analyzes a cultural model for greatness at the Math Corps, an enrichment mathematics program of primarily African American students from public schools in Detroit, Michigan. Corpus analysis of staff addresses eight interrelated conceptual relationships about greatness, conceptualized as a resource inside individuals motivating success. Compared to contemporary and historical American English corpora, this cultural model differs systematically from general understandings of greatness. Aspects of these conceptual relationships are then elaborated through gestural and graphic modalities. This cultural model produces a framework for decision and action, motivating student success in a challenging educational environment. This study integrates ethnography, corpus linguistics, and discourse analysis in understanding conceptual metaphor and cultural models, both in educational settings and other discourse communities.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

Studies of conceptual metaphor and cultural models in cognitive linguistics and cognitive anthropology are at a crossroads. Methodologies such as corpus linguistics (Deignan, 2005; Marley, 2008; Stefanowitsch and Gries, 2006) and critical discourse analysis (Hart, 2008) highlight the need to better understand how metaphors are formed, acquired, deployed, and understood in language in use. Similarly, ethnographic perspectives can help disciplines focused on discourse to address specific problems regarding the motivational force of conceptual language on individuals and groups, particularly in educational settings. Cognitive anthropology examines how motives and decision-making schemata are produced, shared, transmitted, and integrated into conceptual networks (d'Andrade and Strauss, 1992; Holland and Quinn, 1987; Strauss and Quinn, 1997).

The present study is based on a 3-year ethnographic investigation at the Math Corps, a mathematics enrichment program for public school students in Detroit, Michigan, including over 500 h of participant observation, 136 semi-structured interviews with participants including both students and staff, and additional interviews and interactions outside the context of the program. Although Math Corps is centrally concerned with the teaching of arithmetic, and although there is an important literature on mathematical metaphor (Lakoff and Núñez, 2002; Núñez, 2008; Schinck et al., 2008), this study does not principally concern the use of metaphor in specifically mathematical senses. Instead, it seeks to understand the cultural model through which Math Corps motivates students for personal success and achievement in a variety of endeavors, including but not limited to mathematics. The interdisciplinary study of metaphor and cognition thus contributes more broadly to applied research in education and social policy, although these are beyond the immediate scope of the present paper.

* Tel.: +1 313 577 2935; fax: +1 313 577 5958.

E-mail address: chrisomalis@wayne.edu

Cognitive anthropology and cognitive linguistics share a common methodological and conceptual framework, and there has been considerable cross-fertilization among them. Most notably, Holland and Quinn (1987) brought together the work on conceptual metaphor pioneered by Lakoff and Johnson (1980) with insights drawn from cognitive anthropology. Cultural models are frameworks for meaning – learned, shared, culturally variable conceptual understandings of phenomena that motivate decisions and action in particular contexts. They are related to language and are elicited through language, but need not must they be purely linguistic. Rather, they are cognitive phenomena that structure activity and discourse in meaningful and patterned ways.

Data from language in use are necessary to build evidence for the specific cognitive frameworks through which language relates to cognition and behavior. Corpus data are increasingly being used to examine sociolinguistic variation among speech communities and to examine linkages between language-in-use and cognition-in-practice. Doing so allows us not only to avoid some of the pitfalls involved in identifying and analyzing such metaphors (McGlone, 2007), but also to enrich the theoretical foundations of corpus-based studies with analytical frameworks derived from anthropology and discourse analysis.

Collocations, or co-occurrences of lexical patterns within a corpus of data, provide a framework under which specific ideas about the relationships between words in actual texts can be evaluated, refined, and analyzed (Stubbs, 1996, 2001). Moreover, examining specific aspects of syntax and discourse structure can be extremely useful in evaluating the way in which metaphors affect individual decision and action. Stubbs (1999: 234–6), a corpus linguist, notes that earlier and characteristically woolly notions of linguistic relativity inadequately demonstrate specific correspondences between language and thought and instead rely on minimal informant data or (at worst) supposition. From an anthropological perspective, Lucy (1997) advocates for a rigorous testing of specific claims regarding language–cognition relationships and shows how this might be done. From their very different research traditions, both Stubbs and Lucy insist on integrating a deeply empirical approach to language in use with the more abstract foci of earlier traditions.

The present study is an analysis of a particular cultural model for *greatness* at the Math Corps program using corpus data. *Greatness* is a generalized, metaphorically-driven concept that is regarded as motivating success within the program and more broadly in students' lives. It is a major topic of discourse among both staff and students, in ways that differ from its ordinary English usage, and thus is highly suitable for study as a cultural model.

This paper has five general goals:

- (a) to identify systematic patterns among specific forms of discourse about *greatness* at Math Corps, which are then identified collectively as a cultural model;
- (b) to compare these patterns with the way that *greatness* is conceptualized in English outside Math Corps;
- (c) to demonstrate cultural transmission of this model by comparing staff and student discourse about *greatness*;
- (d) to link this cultural model to nonverbal (gestural and graphic) representations of *greatness*;
- (e) to identify aspects of the *greatness* cultural model that motivate academic and personal success.

2. Math Corps

The Math Corps is an enrichment mathematics education program designed and run by the Department of Mathematics and the Center for Excellence and Equity in Mathematics at Wayne State University in Detroit, Michigan. It was founded in 1992 by Prof. Steven Kahn, a mathematician who remains the executive director of the program. It serves middle-school students who attend or will be attending Detroit public or charter schools in the seventh, eighth, and ninth grades, as well as promoting enriched learning for teaching assistants in the 10th, 11th, and 12th grades. Approximately 95% of the students in the program are African-American, which roughly reflects the composition of Detroit public schools. It operates primarily as a 6-week summer program, with Saturday programs throughout the academic year. The curriculum is designed to supplement the school-year academic curriculum while providing a social environment that encourages peer mentorship and the development of self-esteem. Described in these terms, it may seem little different from other university-sponsored enrichment mathematics programs that operate throughout the country.

There is a broad consensus that Detroit public schools are not currently providing a sound foundation in arithmetic and mathematics suitable for most students (Gawlik et al., 2012). While charter schools have been touted as a solution, recent evidence suggests that American charter schools are not outperforming their public counterparts in mathematics (Berends et al., 2010; Esposito, 2011). Most new Math Corps students initially lack the educational foundations needed for success in mathematics. The program starts at a very elementary level (the number line, fractions, arithmetic) but rapidly moves students who were working well below grade level into college-level concepts (imaginary and complex numbers, graph theory). Math Corps not only straddles the line between remediation and enrichment, but dissolves that distinction entirely.

Minimal social-scientific research on the Math Corps program has been conducted to date. Edwards et al. (2001) emphasize the integration of social, emotional and educational factors as contributing to the success of the program. While this is certainly true, it is a fairly general account that could apply to any number of programs. One challenge encountered when conducting research on Math Corps is that it is impossible to control for the variety of factors that lead to improved outcomes. There exist little data that could pinpoint the degree to which Math Corps directly affects students' mathematical achievement, independent of socioeconomic status, parental involvement, or school quality. The goal of the present study, then, is not to demonstrate that Math Corps has a specific effect on mathematical outcomes that would not have occurred otherwise, but to illustrate, using ethnographic and linguistic data, how particular outcomes can relate to a cultural model.

Download English Version:

<https://daneshyari.com/en/article/10460900>

Download Persian Version:

<https://daneshyari.com/article/10460900>

[Daneshyari.com](https://daneshyari.com)