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A taxonomy of situations from Chinese idioms

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Abstract

Although considerable work has been done on personality structure, little attention has been paid to the structure of situations. A lexical approach to situational taxonomies is presented, based on abstract psychological descriptions of situations in Chinese idioms. Chinese idioms were chosen because they offer a rich set of single terms for labeling situations. Native speakers of Chinese and English each sorted one of two lists of situations in their native language. The resulting sorting data was cluster analyzed. There was good agreement between the Chinese and American participants in the major distinctions, particularly within the same list. Across the different samples of participants, goal processes, or what happened to people's goals, best described the distinctions that people made across different situations. Implications of this taxonomy for conceptualizing situations and for thinking about the relationships between personality and situations are discussed.

Keywords: Taxonomy; Situations; Chinese idioms; Goal processes; Person–situation interactions

1. Introduction

If there is one overarching theme that can bridge the two fields of personality and social psychology, it is the one stated by Lewin (1936): "Every psychological event depends upon the state of the person and at the same time on the environment, although their relative importance is different in different cases" (p. 12). More often, this overarching theme is expressed in a well-known mathematical formula, $B = f(P, S)$ where behaviors (B) are a

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function of the person (*P*) and situations (*S*). Ideally, in a triad consisting of the person, the situation, and behavior, "knowledge about any two of these should lead to an understanding of the third" (Funder, 2001, p. 210). Undoubtedly, systematic conceptualizations of the person and the situation are central to our understanding of behaviors.

In personality psychology, consensus about the basic units of the person had not been reached until the emergence of a lexical approach to personality traits (e.g., the Big-Five model). According to Galton (1884), any meaningful distinctions in individual differences in personality should have been encoded in the language. Further, the more important an aspect is, the more likely it is that it will have been encoded as a *single term* in the lexicon. In sustained efforts for over half a century, personality psychologists relied on this hypothesis and developed a well-accepted taxonomy of personality traits (Allport & Odbert, 1936; Cattell, 1943; Digman & Takemoto-Chock, 1981; Goldberg, 1990, 1993; McCrae & Costa, 1985; Norman, 1963; Wiggins, 1979). Briefly stated, individual differences in personality characteristics can be mapped onto five broad distinctions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to experience. Moreover, major aspects of these distinctions have been found in a number of different languages (McCrae & Allik, 2002; Saucier & Goldberg, 2001).

Although much is known about the structure of personality, little is known about situations. As Funder (2001) recently noted:

> *For all the arguments that the situation is all-important (*Ross & Nisbett, 1991*), little is empirically known or even theorized about how situations influence behavior, or what the basic kinds of situations are* (*or, alternatively, what variables are useful for comparing one situation with another*) (p. 211).

In a recent paper, Swann and Seyle (2005) further argued that full implementation of Mischel and Shoda (1999) well-known if-then profiles of personality "clearly requires the development of a comprehensive taxonomy of situations—a development that has been pursued with stunningly modest success since Wright and Barker (1950) early attempt" (p. 162).

We concur with these observations. In fact, the "assigned task" by Lewin to systematically conceptualize situations has been largely ignored in social psychology (some exceptions are Argyle, Furnham, & Gramham, 1981; Barker, 1963; Cantor, Mischel, & Schwartz, 1982; Kelley, 1997; Magnusson, 1981; Miller, Cody, & McLaughlin, 1994; Read & Miller, 1989a). Typically, attempts to understand situations have followed an indirect and implicit trajectory. Laboratory studies have investigated how people respond to different experimental manipulations or different situations, with a frequent focus on identifying powerful situations that reduce between individual variability in response. At the same time, explicit and systematic conceptual understanding of situations has been largely neglected. Work to construct comprehensive taxonomies of situations, unfortunately, has received very little attention.

Thus, the goal of this paper is to further the development of a reasonably comprehensive taxonomy of situations. We first delineate ways in which previous taxonomies of situations have been constructed. We then present a taxonomy of situations we have developed based on Chinese idioms, and identify principles by which people organize the situations described by those idioms.

2. Taxonomies of situations

In the past, few systematic attempts have been made to explicitly construct situation taxonomies on an empirical basis (for a review from a personality trait perspective, see Ten

Berge & De Raad, 1999). We outline the procedures of these attempts below, and discuss their limitations. To begin, two steps are necessary to develop taxonomies of situations: generating a sampling pool of situations, and categorizing the situations on certain criteria.

2.1. Generating situations

A primary issue in constructing situation taxonomies is to choose a reasonable unit of analysis (Pervin, 1978). Characteristics of the situations being sampled may strongly influence the nature of taxonomies. In the past, four approaches have been used to obtain sampling pools of situations. The first, and less empirically based approach involved researchers making up lists of typical situations in a certain domain (e.g., in an academic setting; Magnusson, 1971). The second, more often used and more empirically based approach, adopted situations from participants' self-reports or situation diaries (Battistich & Thompson, 1980; Eckes, 1995; Forgas, 1976; Pervin, 1976). Recently, a third approach to sampling situations asked participants to generate descriptions of situations in which different personality traits can be expressed (Ten Berge & De Raad, 2001, 2002). Unfortunately, this approach only included situations that sustain individual differences, and a large number of situations that potentially reduce individual differences may have been precluded. For example, in most cases, few individual differences are expected in unfamiliar, formal, or public situations such as weddings, funerals, and churches. In contrast, individual differences are most likely to be expressed when the contexts are familiar, informal, or private, or when there is considerable freedom of choice (Buss, 1989). Therefore, it would be reasonable to assume that most situations in Ten Berge and De Raad (2001, 2002) list fall into such latter categories. Parallel to the lexical approach to personality traits, the fourth, and more complete approach to obtaining situations examined lexicons of situations. Van Heck (1984, 1989) searched Dutch dictionaries for nouns that referred to situations. Critiques of this approach, however, argued that nouns of situations included in this work were too static (e.g., fire, guard) and extreme (e.g., murder, hypnosis) (Ten Berge & De Raad, 2001).

2.2. Categorizing situations

After sampling pools of situations were gathered, two approaches have been used to categorize situations. The first one asks participants to make similarity judgments between situations, and therefore required the least prejudgment from researchers trying to identify the underlying structures of situations. Participants have sorted situations into different groups based on how similar they were to each other (Forgas, 1976), or rated similarities between pairs of situations (Battistich & Thompson, 1980; Magnusson, 1971). The second approach involved rating situations on various features relevant to the situations. Most typically, situations were rated on a number of situational features collected from participants' self-reports such as formal vs. informal, familiar vs. unfamiliar, simple vs. complex, physical locations, person involved, and so forth (Battistich & Thompson, 1980; Eckes, 1995; Forgas, 1976; Pervin, 1976; Van Heck, 1984, 1989). Situations were also rated on feelings, affect and behaviors associated with situations (Battistich & Thompson, 1980; Pervin, 1976), degree of expressiveness of personality traits (Ten Berge & De Raad, 2001), and one's ability to deal with situations (Ten Berge & De Raad, 2002).

Finally, three different kinds of analytic procedures were used in these taxonomies: cluster analysis, which provided hierarchical structures of situations (Eckes, 1995; Forgas, 1976; Ten Berge & De Raad, 2001), factor analysis, which provided major factors of situations (Magnusson, 1971; Pervin, 1976; Ten Berge & De Raad, 2001, 2002; Van Heck, 1984, 1989), and multidimensional scaling analysis, which provided dimensional structures of situations (Battistich & Thompson, 1980; Forgas, 1976). As a result, a variety of types of situations were found in these taxonomies. Table 1 summarizes the previous taxonomies of situations.

2.3. Limitations of previous taxonomies

Across these taxonomies, there is little agreement on the kinds of situations that can be found. Aside from different judgment criteria used for categorizing situations, much of the disagreement can be assigned to the different sources of situations that have been sampled. Essentially, no agreement has been reached on what the best source of situations is. As a result, researchers have often had to rely on participants' self-reports of situations. Unlike the fact that there is a rich set of single terms that describes personality traits, a rich set of single terms that describes situations does not seem to be available.

Van Heck (1984, 1989) work on situation nouns provides an exception by looking into a comprehensive set of nouns that refers to situations. However, while nouns of situations tend to define the general or nominal settings of situations, they tell us very little about what psychologically mattered to an individual. In this regard, Mischel and colleagues argued that personality research needed to "move beyond the nominal situations specific to any given setting that would necessarily be of limited generalizability and usefulness outside the specific setting." Rather, more attention needed to be paid to "the relevant psychological features of situations that exert a significant impact on the behavior of the person and that cut across nominal settings" (Mischel, Shoda, & Mendoza-Denton, 2002, p. 51).

Based upon this criterion, one may argue that our language lacks a rich set of single terms for labeling psychologically meaningful situations. Jones and Nisbett (1971) considered this problem in more general terms:

> *It may also be noted that our vocabulary is rich in dispositional or trait terms* (*the Allport-Odbert list includes over 18,000 terms*) *and quite impoverished when it comes to describing the situation. Among personality theorists* Murray (1938) *has shown as much sensitivity to this problem as any one, but his list of environmental 'press' is merely adapted from a complementary list of needs.* In social psychology Barker (1965) *has stood almost alone in attempting to develop a descriptive taxonomy for behavioral settings. His important effort is undoubtedly much impeded by the inadequate resources placed at his disposal by the English language* (p. 90).

Soon after, Bem and Allen (1974) expressed a very similar view. More recently, this view was echoed by Ickes, Snyder, and Garcia (1997): "the English language presents us with a rich vocabulary for describing traits but an impoverished vocabulary for describing situations" (p. 172), and later by Snyder and Cantor (1998).

Further, with the exception of Van Heck's work, most taxonomies in the past focused on a small number of situations in fairly restricted domains. Specifically, taxonomies were often built on thirty or so situation descriptions generated by college students.

Table 1
A summary of taxonomies of situations

Authors	Magnusson (1971)	Forgas (1976)	Pervin (1976)	Battistich and Thompson (1980)	Van Heck (1984, 1989)	Eckes (1995)	Ten Berge and De Raad (2001)	Ten Berge and De Raad (2002)
Sampling pool of situations	36 academic situations of college students subjectively formulated by researchers	25 everyday situations from housewives' and college students' self-report	23–29 everyday situations from college students' self-report	30 everyday situations from college students' self-report	248 nouns of situations in Dutch dictionaries	30 everyday situations from college students' self-report	132 situations generated from personality traits	237 situations generated from personality traits
Examples of situations	Listen to an interesting lecture; have forgotten to prepare a report	Playing with your children; having a drink with some friends in a pub	Mother refuses gift; eading for pleasure	On a date with your boy/girlfriend; walking to a class alone	Work, overwork; game, recreation	At the supermarket; going by bus	He/she sees someone; He/she makes a mistake	It is getting dark; moving house
Judgment criteria	Similarity judgment	Similarity judgment; situational features	Situational features, affect and behaviors	Similarity judgment; situational features, affect and behaviors	Situational features	Situational features	Expressiveness of personality traits	Ability to deal with situations
Analysis methods	Factor analysis	Multidimensional scaling; cluster analysis	Factor analysis	Multidimensional scaling	Factor analysis	Cluster analysis	Factor analysis; Cluster analysis	Factor analysis
Types of situations	(1) Positive; (2) Negative; (3) Passive; (4) Social; (5) Active	(*For housewives*) (1) Perceived intimacy of situations; (2) Subjective self-confidence over situations; *(For students)* (1) Involvement; (2) Pleasantness; (3) Know how to behave	(1) Home–family; (2) Friends–Peers; (3) Relaxation–recreation–play; (4) Work; (5) School; (6) Alone	(1) Interpersonal intimacy; (2) Group vs. individual activity; (3) Social isolation; (4) Behavioral conformity	(1) Interpersonal conflict; (2) Joint working (3) Intimacy (4) Recreation; (5) Traveling; (6) Rituals; (7) Sport; (8) Excesses; (9) Serving; (10) Trading	(1) Nonintimate; (2) Emotionally uninvolving; (3) Informal; (4) Relaxed; (5) Social; (6) Familiar social; (7) Frightening; (8) Emotionally involving; (9) Competitive	(1) Adversity; (2) Amusement; (3) Positioning; (4) Conduct; (5) Daily routine	(1) Pleasure; (2) Individual adversity; (3) Interpersonal conflict; (4) Social demand

Ten Berge and De Raad (2001, 2002) work, although including a reasonably large sample of situations, may have excluded many situations in which individual differences are less likely to be exhibited.

Additionally, very little effort has been made in past taxonomies to theorize about the nature of situations and their conceptual underpinnings. A few researchers pointed out that situations are perceived predominantly in terms of subjective, psychological factors (Battistich & Thompson, 1980; Eckes, 1995), or more objective characteristics (Van Heck, 1984, 1989). Nevertheless, it remains very unclear by what principles situations are organized.

To summarize, lack of a rich set of single terms for labeling situations, insufficient efforts in sampling broad domains of situations, and inadequate efforts in theorizing about situations may have all contributed to the fact that little reliable replication has been found. Given these limitations, it is less surprising that this line of work has been "pursued with stunningly modest success," and that no consensus has been reached on which taxonomy has demonstrated the most conceptual and practical usefulness to our understanding of situations. The current work attempts to address these limitations by starting with the search of a rich set of single terms that describes situations.

3. Chinese idioms of situations

We suggest that Chinese idioms of situations can be an ideal source for lexical studies of situations for three reasons. The first reason is that if English has a scarcity of such terms, it may be advantageous to look into some other languages for rich sets of single terms that describe situations.

In recent years, substantial evidence from cross-cultural research has shown that, while Westerners may be more person-oriented, East Asians may be more situation-oriented (e.g., Hsu, 1963; Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001). Nisbett et al. (2001) further suggested that much of the cognitive differences between Westerners and East Asians (e.g., tendencies to be more independent versus dependent of context) are rooted in the different features of the languages and writing systems that Westerners and East Asians employ. Taking one further step, we suggest that these differences may also be rooted in the content of Western and East Asian languages. Thus, a language of situations may be more developed in some Asian languages, and thereby afford a more complete vocabulary for labeling situations.

In fact, Chinese idioms in the Chinese language do provide a large set of single terms that describe situations. Like an idiom in the English language, a Chinese idiom is an expression established by long-term usage and recognized through practice. Unlike idioms in English, however, most Chinese idioms are a standard length, composed of exactly four Chinese characters. The reasons why these idioms show such characteristics are yet to be uncovered by linguistics researchers. From our understanding, this primary characteristic is in line with the lexical hypothesis suggested by Galton (1884). That is, these single and compact terms may capture the most important aspects of psychological situations. Additionally, there are quite a large number of Chinese idioms. A medium size dictionary of Chinese idioms typically collects a few thousand idioms. Some larger dictionaries, strikingly, collect more than 20,000 idioms. In contemporary China, proper usage of a substantial number of Chinese idioms is required in the formal education system. Idioms in the Chinese language are widely used by lay Chinese people, formally or informally, to describe various social encounters in their everyday lives.

A second reason to examine Chinese idioms is that they are fairly abstract and capture a large set of psychologically meaningful situations. Like their counterparts in the English language, Chinese idioms often deliver their meanings metaphorically and apply to diverse everyday settings. In fact, if the idioms were not abstract, they would not have survived the evolution of the language. In other words, as the concrete time, location, and the people involved in everyday situations are constantly changing, as society and the social environment evolve, only those repeatedly occurring and distinctive experiences have been instantiated in the idioms. In addition to the fact that there is a large set of idioms for labeling situations, almost every one of the idioms can be applied to a wide range of concrete everyday settings. For example, there is the Chinese idiom 后悔莫及, which in English means *too late for regrets*. Another example is 后来居上 and its English translation is *catching up from behind*. These examples clearly capture some distinctive psychological meanings of situations in a fairly abstract way. In contrast to the more static situational nouns in Van Heck's work, Chinese idioms of situations are more dynamic. They do not limit themselves to describing "any given setting that would necessarily be of limited generalizability and usefulness outside the specific setting" (Mischel et al., 2002, p. 51). Rather, they convey their meanings across a number of concrete nominal settings.

A final reason to study Chinese idioms is that they can be easily translated into English. In doing this project, we found that with the aid of Chinese–English dictionaries of idioms and with the help of Chinese–English bilinguals, it was relatively easy to translate almost all Chinese idioms into natural sounding English. At the same time, considerable overlap is also expected between Chinese and English idioms. For example, there is a Chinese idiom 趁热打铁 (in English: *strike while the iron is hot*). The English version is essentially the same as the Chinese and is used in a similar way in both Chinese and English. In fact, many Chinese idioms of situations and their English equivalents can be easily found in Chinese–English idiom dictionaries. Nevertheless, the Chinese idioms may include more single terms of situations—that while meaningful in English—have no direct instantiated form in an idiom or common usage term in English. By analyzing these Chinese idioms of situations, we hope to thereby offer a first step in constructing a comprehensive taxonomy of situations.

4. Method

The current research obtained a sampling pool of situational idioms through extensive search into Chinese–English dictionaries of Chinese idioms. Two separate lists of situational idioms were randomly chosen from the larger pool and their Chinese and English versions were presented to native Chinese and American speakers, respectively. The situations were sorted on the basis of similarities between them and the sorting data was cluster analyzed so as to reveal a hierarchical structure of situations in each sample. A taxonomy of situations, in turn, was derived by comparing clusters of situations identified across samples of participants and lists of idioms.

We chose this analytic procedure, and cluster analysis in particular, because it can be used to better reveal hierarchical structures in situations. Hierarchical structures have been found in a number of domains in psychology such as objects (Rosch, 1978), emotion (Shaver, Schwartz, Kirson, & O'Connor, 1987), person categories (Cantor & Mischel, 1979), goals (Chulef, Read, & Walsh, 2001), and categories of situations (Cantor et al., 1982). We hypothesized that situations would be hierarchically organized, starting with

broad classes of situations, such as success versus failure (or goal achievement versus goal failure), which would be divided into increasingly more specific kinds of situations. The analytic procedure we chose would help us better identify principles by which situations are organized.

4.1. A sampling pool of situational idioms

Two native Chinese speakers served as independent judges for selecting an initial list of Chinese situational idioms from two medium-size Chinese–English dictionaries of Chinese idioms (Gui & Huang, 1999; Shi, Wang, & Zhang, 2000). Each dictionary collected some 3000 Chinese idioms. The two independent judges each picked their own list of idioms from the dictionaries. It is crucial to note that both judges were blind to any potential theory or organizing principles that may underlie the idioms. They were instructed to pick idioms that they thought described situations. Situations were broadly defined as any given state of affairs, circumstances, events, and activities that people may find themselves in. Idioms that describe person attributes and emotional states without identifying any context, however, were not considered as situations.

The rationale for choosing this definition is elaborated here. First, as a starting point, the breadth of this definition is comparable to how personality psychologists initially defined traits. Most taxonomies of personality traits in English today came from Allport and Odbert (1936) list of 17,953 terms. When Allport and Odbert started their work, they selected any terms in the dictionaries that could be used to distinguish individual differences. It was only later that more restrictive criteria (such as exclusion of appearance and evaluative terms) were applied to reduce the length of the list (John & Srivastava, 1999). Similarly, an idiom was considered situational as long as it seemed to describe certain aspects of a naïve understanding of situations. Second, a more inclusive and broad definition of situations is perhaps more desirable at this early stage of analyzing situations. Strong prejudgment from researchers of what counts as a situation may limit the conceptual scope of a theory of situations. In this regard, Eckes (1995) adopted a similar strategy by leaving the precise notion of situations unspecified when he asked college students to generate descriptions of everyday situations. Over time, with the accumulation of work and discussion, a more explicit, narrow-ranged and consensually accepted definition of situations may emerge.

At the same time, certain idioms are clearly not situations. For example, idioms that refer to person attributes describe persons, not situations, and idioms that refer to behaviors, without identifying any context, are behaviors, but not situations. The decision to exclude descriptions of emotional states is based on appraisal theories of emotion, which suggest that emotions cannot be regarded as situations per se. Rather, they are consequences of the appraisals of certain situations (e.g., Lazarus, 1991; Roseman, Spindel, & Jose, 1990). However, emotional idioms in this sampling pool were excluded only if they solely described the inner emotional state of a person, but not the situation in which the emotion occurred. Idioms that described situations that could elicit emotional responses were not excluded. For example, “to have fulfilled one’s wish” would induce joyfulness, “too far behind to catch up” would induce frustration or desperation, “out of step/inappropriate for the occasion” would induce embarrassment, and “to meet again after a long separation” would induce more complex feelings such as both sorrow and joyfulness.

A sampling pool of situations was formed by restricting the selection to idioms that both judges agreed described some aspects of naïve understandings of psychological situations. Out of more than 3000 idioms in the dictionaries, Judge 1 provided a list of 957, and judge 2 provided a list of 1013 idioms of situations. These two lists resulted in 1042 unique idioms, of which 928 were found in both lists, and thus served as the sampling pool.

4.2. The two lists of idioms

Two separate lists of 140 idioms were randomly selected from the larger pool of 928 idioms as experimental materials for later sorting tasks. The number 140 was chosen because similar sorting research showed it to be a manageable number of items for participants (Chulef et al., 2001; Shaver et al., 1987). All idioms in the two lists were translated into English via the Chinese–English dictionaries of Chinese idioms and then examined, as necessary, by our research group. Specifically, the English translations were reviewed by six native English speakers and three Chinese–English bilinguals (the first list), and by two native English speakers and two Chinese–English bilinguals (the second list) based on three criteria: (a) whether the English translations of idioms made unambiguous sense to native English speakers, (b) whether the Chinese–English bilinguals agreed that the Chinese and English translations meant exactly the same thing, and (c) whether the idioms indeed described psychological situations.

In this procedure, an apparent contradiction needs to be resolved. Specifically, the earlier list of 928 idioms was initially chosen by two native Chinese speakers based on a broad definition of situations. In contrast, three additional criteria were used in the later stage of reviewing the two lists of 140 idioms. This seems to suggest that we may have used somewhat different definitions of situations in the earlier and later stages of this procedure. However, this was not the case. We consider the later criteria to be necessary and they should not have biased the *content* of the remaining idioms in a systematic way. As we planned to examine the structures of the idioms in both Chinese and English speakers, it was necessary to check if the English translations of the Chinese idioms were written clearly (Criterion a) and accurately (Criterion b) to present to native English speakers. Despite the fact that we used two dictionaries authored by respected experts in the Chinese and English languages, there were occasions where some English translations of the Chinese idioms did not make unambiguous sense or mean exactly the same thing. Decisions to exclude these relatively poorly written translations were made based on the quality of translation, and not on the contents of the idioms. Criterion c of whether the idioms indeed described psychological situations was used to ensure that the two native Chinese speakers did a good job in selecting idioms of situational connotation. However, no new definition of situations was involved. Decisions to exclude certain idioms were made upon extensive discussion among the members of the entire research group using the same broad definition.

For the first list, criterion (a) excluded 11 idioms, criterion (b) excluded 6 idioms, and criterion (c) excluded 8 idioms. For the second list, criterion (a) excluded 9 idioms, criterion (b) excluded 2 idioms, and criterion (c) excluded 4 idioms. As a result, two final lists of 115 and 125 idioms were obtained. Thus, only a small number of items were excluded at the later stage because they were deemed to not describe situations.

4.3. Participants

Four separate samples of participants from the Web were included in the present research. Specifically, 404 Chinese participants (mean age 27.1, $SD = 2.9$; 46.5% female) and 179 American participants[1] took part in studies for the first list of 115 idioms. 148 Chinese participants (mean age 26.9, $SD = 4.0$; 55.9% female) and 189 American participants (mean age 35.1, $SD = 11.2$; 79.4% female) took part in studies of the second list of 125 idioms. Chinese participants were recruited through a Chinese commercial website whose primary target users were Chinese students who were in the United Stated for the purpose of pursuing advanced degrees. They confirmed that their native language was Chinese before they entered the study. American participants were recruited through our mailing list for online psychology experiments hosted at the University of Southern California and they confirmed that their native language was English before they entered the study. All participants were automatically entered into a lottery for one $100 prize and two $50 prizes for every 200 participants.

4.4. Procedure

Essentially, the procedure asked participants to sort situations into different groups based upon how similar they were to each other. On the Web, participants were instructed that the study was about their categorizations of situations. Following the instructions, two columns were presented side by side on the study webpage. The left column was labeled "unclassified" and the right column was labeled "classified." The left column initially contained a list of situations (in Chinese for Chinese participants and in English for American participants). The right column was initially empty.

The assigned task asked participants to first take a few moments and look through the entire list of situations to familiarize themselves with the situations. Once this was done, their task was to imagine that they or someone else was in the situations listed, and then sort the situations from the left to the right column based on how they thought the situations went together. Situations could be selected using the mouse and moved over to the right column by pressing a direction button between the two columns. Selecting and moving multiple situations at one time was allowed by holding the CTRL key for PC users and the COMMAND key for MAC users. Initial situations were automatically numbered as category 1 in the right column the first time that participants moved them over. After that, new situations were numbered in consecutive order as category 2, 3, 4, etc. in the right column. Every time the participants moved situations from the left to the right column, a prompt popped up and asked the participants which category they would like the situations to be moved to. Participants were asked to put the situations in the same category if they thought the situations went together and in different categories if they thought the situations did not. Moving situations from the right column back to the left one was also allowed and the selected situations in the right column showed up at the bottom of the left column for further consideration. No minimum or maximum number of categories was

[1] While we did not obtain demographic information for this sample, they were recruited from the same source of participants in our second list of idioms for American participants where mean age is 35.1, $SD = 11.2$, and 79.4% female.

expected from participants, but they were encouraged to make the situations in the same category similar, and the ones in different categories dissimilar.[2]

5. Results

5.1. Descriptive statistics

For the first list of 115 idioms, the Chinese participants sorted them into anywhere between two to 88 categories ($M = 16.25$; $SD = 16.906$) and category size ranged from one to 94 idioms ($M = 7.03$; $SD = 10.129$). The American participants sorted them into two to 61 categories ($M = 15.24$; $SD = 11.947$) and category size ranged from one to 77 idioms ($M = 7.55$; $SD = 9.075$). For the second list of 125 idioms, the Chinese participants sorted them into two to 76 categories ($M = 19.41$; $SD = 16.494$) and category size ranged from one to 83 idioms ($M = 6.44$; $SD = 8.858$). The American participants sorted them into two to 62 categories ($M = 14.03$; $SD = 10.128$) and category size ranged from one to 87 idioms ($M = 8.91$; $SD = 9.581$).

5.2. The hierarchical structures of situations

The number of times that idioms had been sorted together was treated as the distance among them and converted into an $N \times N$ matrix ($N = 115$ or 125) for each sample. Matrices were imported into ClustanGraphics (Wishart, 2004) and an agglomerative cluster analysis method, the increase in sum of squares (Ward's method), was used to construct a hierarchical structure for each sample. Ward's method seeks to minimize the squared Euclidean distances among all the items within a cluster and tends to create relatively compact clusters (Wishart, 2004).

The "best solution" across each of the four samples was chosen at the 17-cluster level based on two criteria. First, we used a more objective criterion of upper tail t tests in the ClustanGraphics program. This test examines the change in the size of the fusion values at each step as clusters are agglomerated (Mojena, 1977; Mojena & Wishart, 1980; Wishart, 2005). A large and significant step change indicates a significant increase in the heterogeneity (decrease in homogeneity or similarity) of the resulting clusters, as two clusters are combined. In other words, this indicates that items that are being put in the same cluster are significantly less similar to each other than was true for preceding clusterings. On the other hand, the lack of a significant increase indicates that the clusters being agglomerated are relatively similar and that the agglomeration does not lead to a significant increase in heterogeneity. The upper tail t test compares the increase in fusion values at a given step to the standard deviation of the set of fusion values for the entire range of the numbers of clusters. The best solution, therefore, is the number of clusters immediately before the first significant increase in fusion values. So if the best solution for a given data set was 10, it

[2] In reference to this Web procedure, we also conducted a pilot study in which a sample of 135 American college students sorted the first list of 115 idioms in our lab. Participants were given essentially the same instruction, and sorted a stack of cards with one idiom printed on one card. Results from this lab sample were very similar to the sample we obtained via the Web. A number of previous studies also provided support for the validity of Web based research in general (see Birnbaum, 2004; Gosling, Vazire, Srivastava, & John, 2004; McGraw, Tew, & Williams, 2000).

means that going from 10 to 9 clusters led to the first significant increase in heterogeneity. Thus, this test can be used to determine a range of numbers of clusters that reasonably characterize the structure of the data. This upper tail t test suggested that at the .05 level with 113 degrees of freedom for the first list of 115 idioms, 17 clusters would be the best solution for the first sample, and 18 clusters would be the best solution for the second sample. At the .05 level with 123 degrees of freedom for the second list of 125 idioms, 27 clusters would be the best solution for the third sample, and 20 clusters would be the best solution for the fourth sample. As a result, if we would like to make comparisons among samples, we might choose a solution between 17- to 20-clusters across samples, since 3 of the 4 solutions fell in that range. A second, more subjective reason for us to choose the 17-cluster solution was that, according to Wishart (2005), statistical tests in cluster analysis are not sufficient for establishing a useful level of analysis. Conceptual criteria and the meaningfulness of the solution are also central. Thus, we also chose the 17-cluster solution because this solution seemed to make the most conceptual sense across four samples and additional clusters did not capture further meaningful distinctions. Figs. 1–4 present the hierarchical structure of the situational idioms in each sample.[3] Underscored situations are exemplars of their corresponding clusters on the 17-cluster level. Exemplars are the items with the highest average within cluster similarity and are selected by ClustanGraphics.

Labels at the far left of the clusters of situations were generated in three steps. First, the authors, in extensive discussions, generated initial labels to best summarize the contents of the clusters. Second, a different group of three researchers then discussed and modified these labels. Third, another group of seven graduate students who were unfamiliar with the current research were asked to rate how well the modified labels described the contents of the clusters on a four-point scale from very good (1) to very poor (4). They were also asked to suggest a new label if they thought one was poorly written. 57 of the 68 (or 84%) labels received an average rating score no higher than 2, suggesting that these labels reasonably well captured the contents of the clusters. The remaining 11 labels were further discussed by the authors until consensus was reached.

5.3. A taxonomy of situations

The proposed taxonomy of situations is largely organized on two different levels of abstraction. On the broadest level of 2-cluster solutions, the four samples clearly demonstrate that people categorize situations by positive versus negative connotations of the situations, or success versus failure of people's goal pursuit.

On the more concrete level of the 17-cluster solutions, a total of 68 clusters, or categories of situations were identified across the four samples of participants and the two lists of idioms (17 categories in each cluster solution times four solutions equal 68). Among these categories, five highly similar ones were found across all four samples, two highly similar ones were found across three samples, 13 highly similar ones were found across the two samples for one list but not across the lists, and 16 unique ones were found across the four samples. Thus, 20 (five plus two plus thirteen) highly similar categories were shared across the two

[3] The original Chinese idioms and their English equivalents are available upon request from Yu Yang at yuyang@usc.edu.

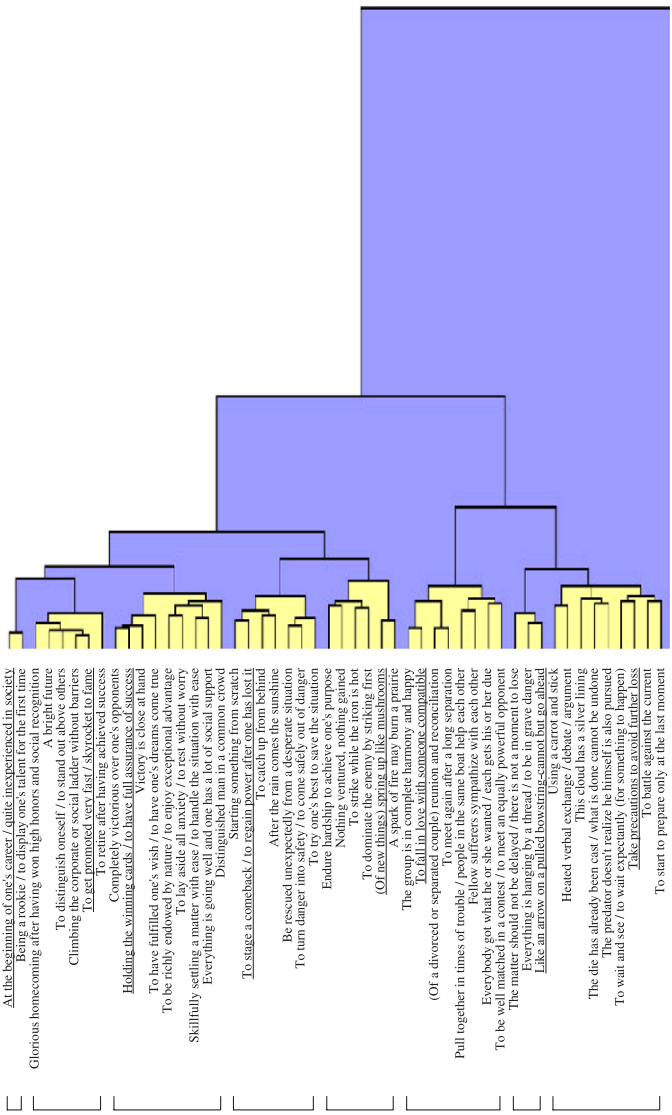

Fig. 1. Hierarchical structure of situations from idioms list 1 in Chinese sample.

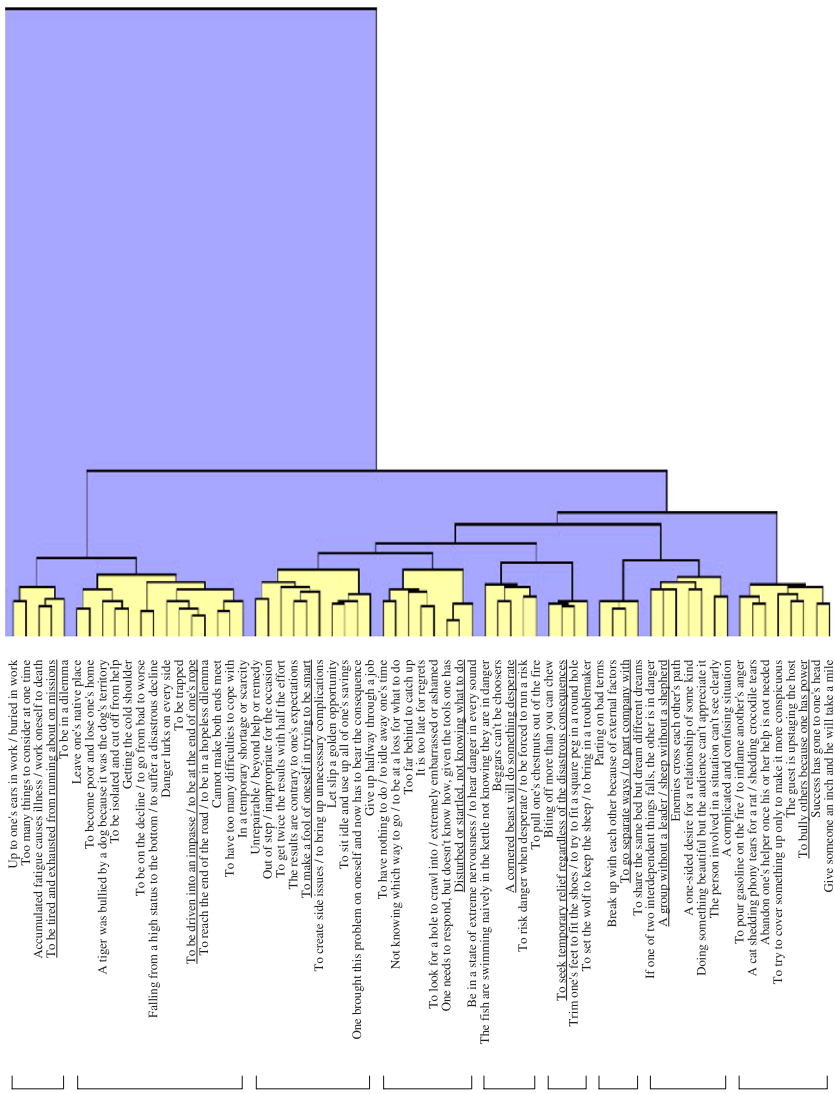

Fig. 1 (*continued*)

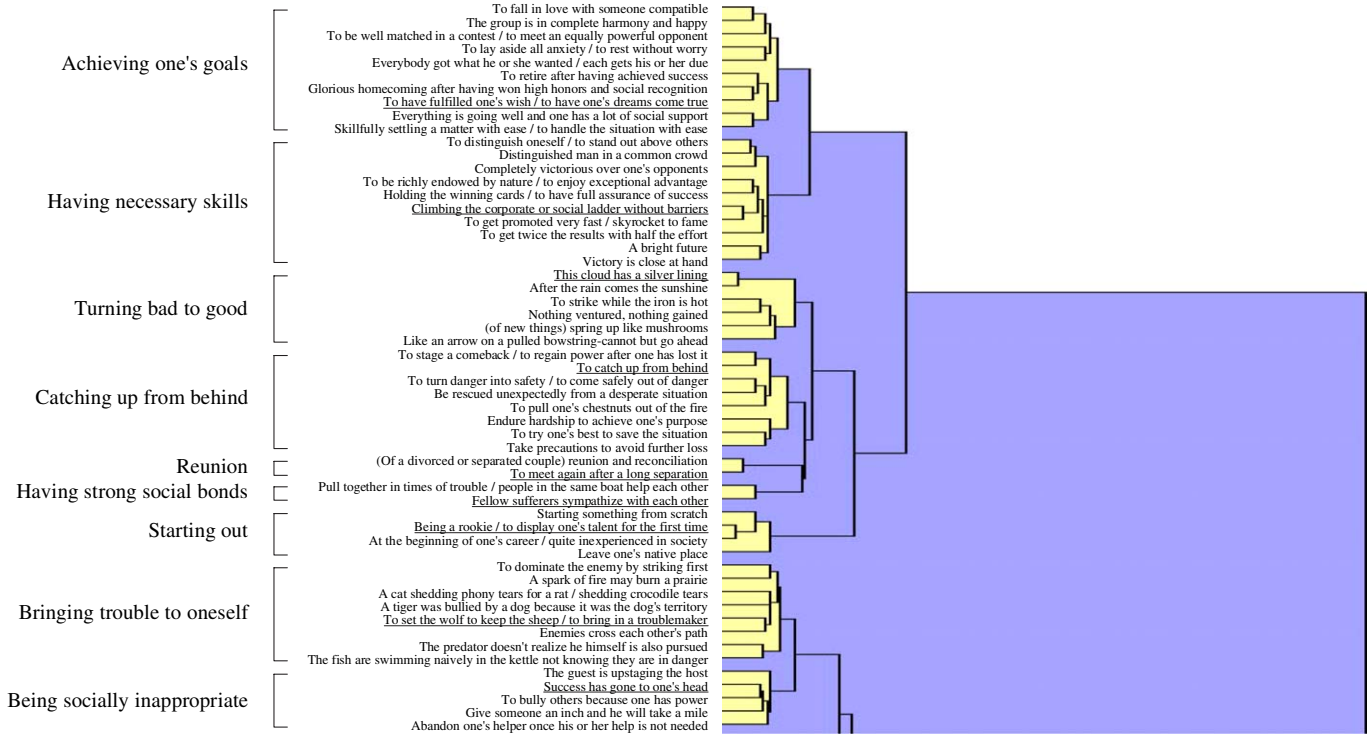

Fig. 2. Hierarchical structure of situations from idioms list 1 in American sample.

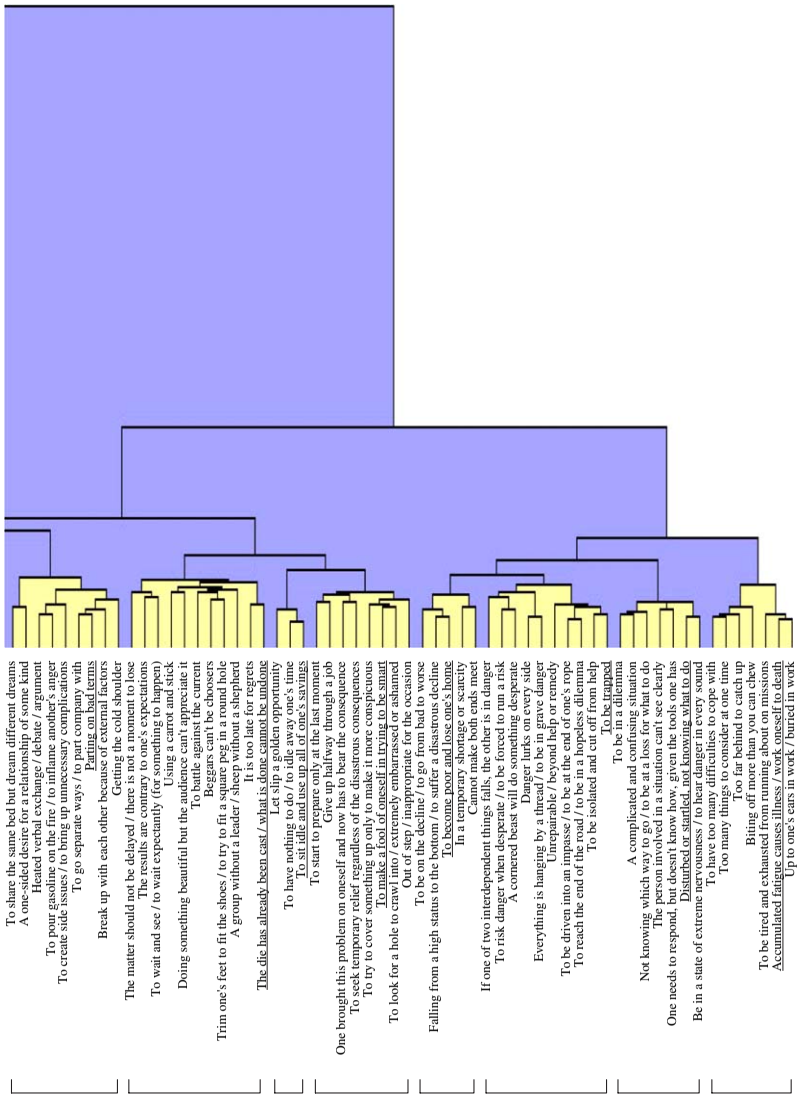

Fig. 2 (*continued*)

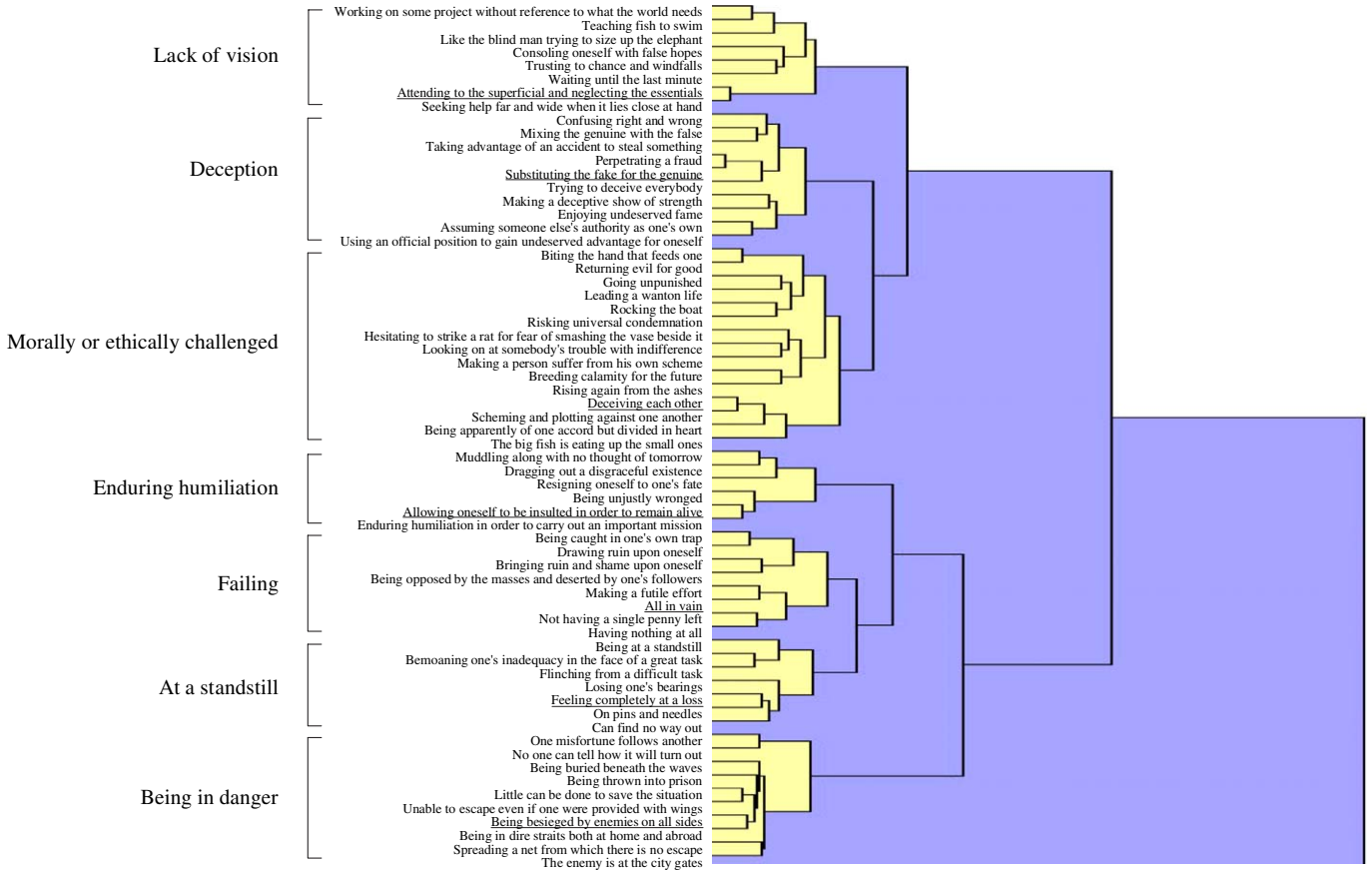

Fig. 3. Hierarchical structure of situations from idioms list 2 in Chinese sample.

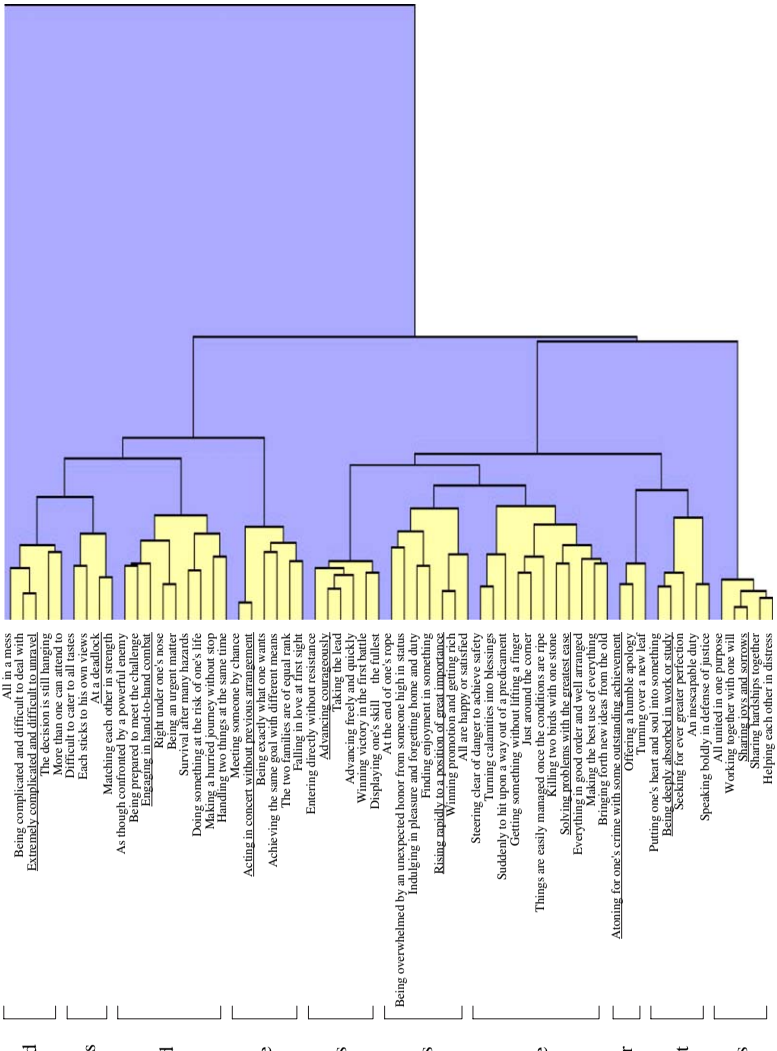

Fig. 3 (*continued*)

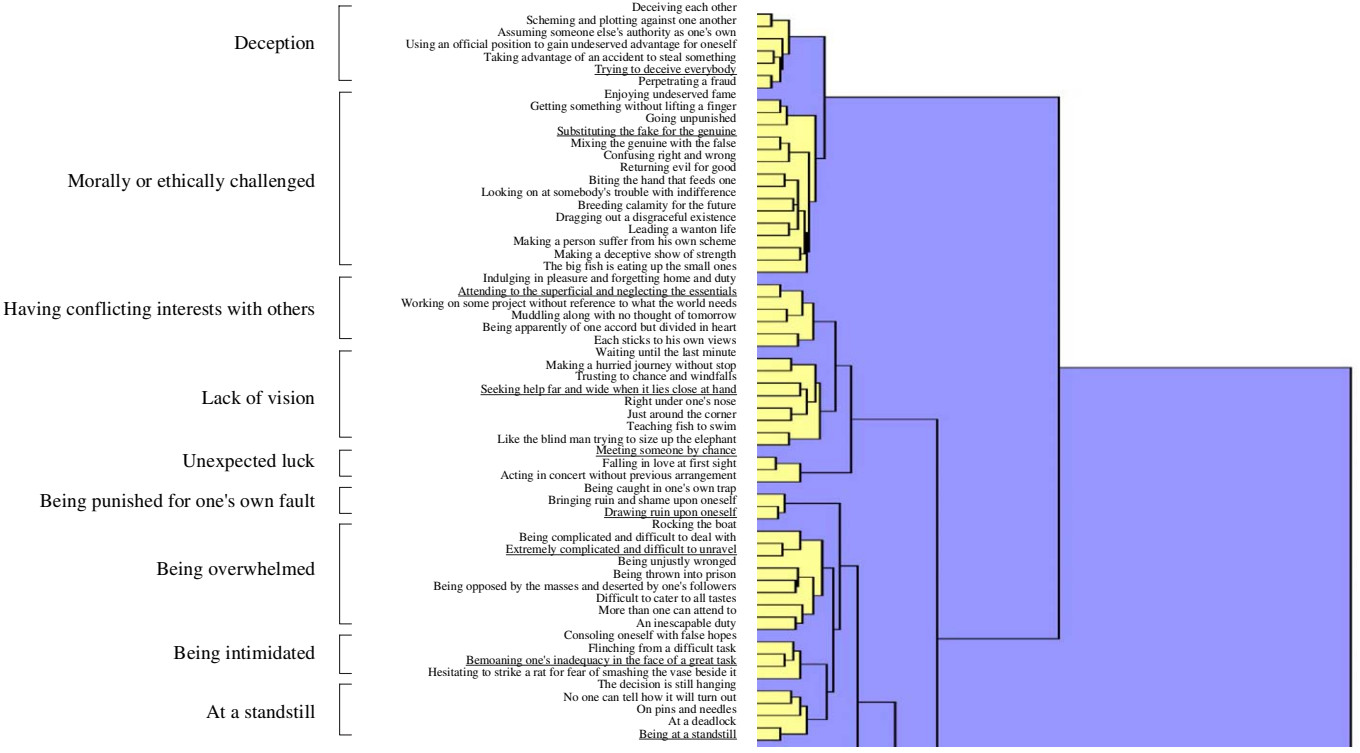

Fig. 4. Hierarchical structure of situations from idioms list 2 in American sample.

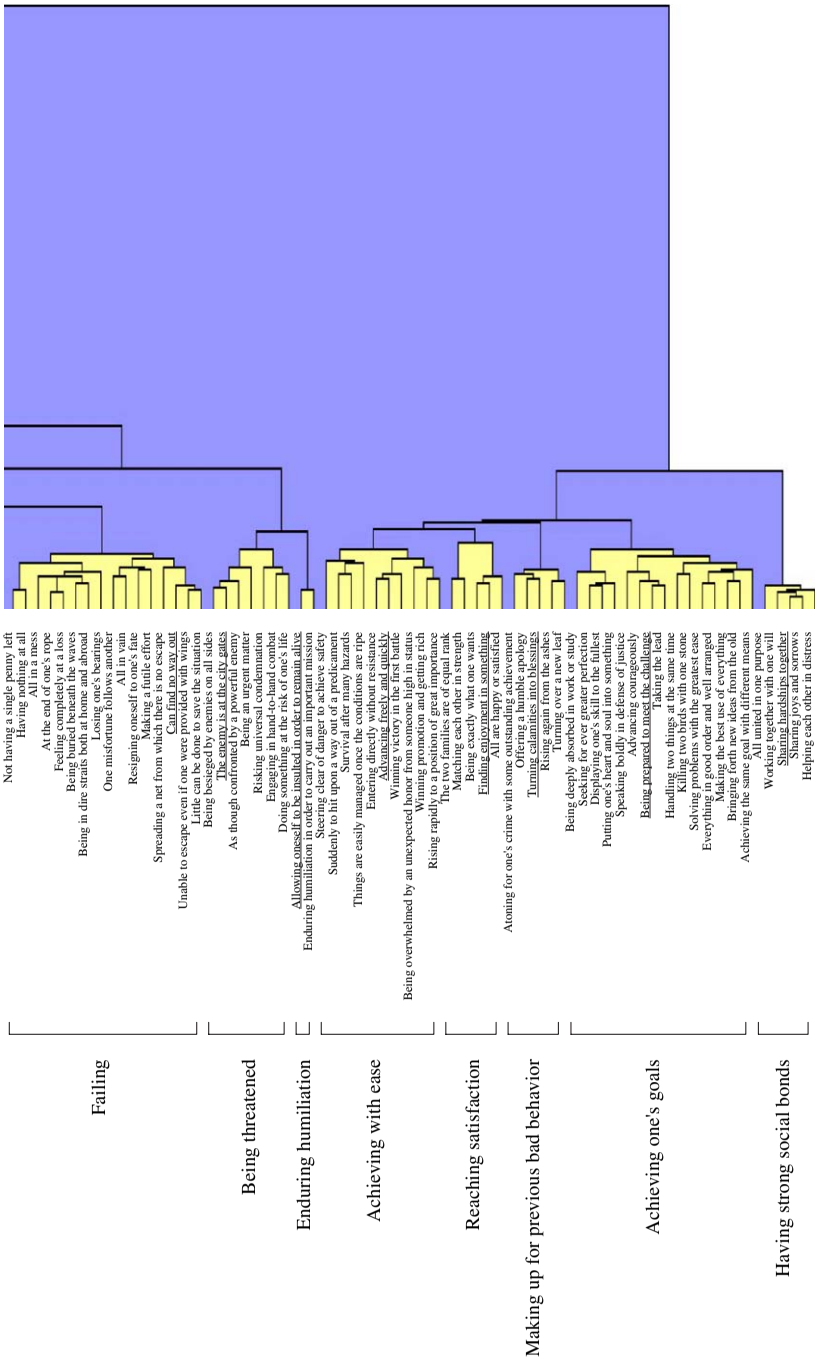

Fig. 4 (*continued*)

culture groups within at least one list of idioms, and seven (five plus two) highly similar categories were shared across both the two idioms lists and across cultures.

More specifically, among these categories, five highly similar ones were found across four samples. These categories contribute to 29% (20/68) of the total categories. Specifically, *Achieving one's goals* and *Failing* directly relate to whether or not one's goals are attained. Situations *of Having strong social bonds* seem to suggest that one's goal pursuit are supported by others, situations *of Being overwhelmed* seem to imply a lack of ability to attain one's goals, and situations of *Lack of vision* are related to circumstances when inappropriate plans are used in attempting one's goals.

Two highly similar situation categories were found across three samples (6 situation categories, or 9% of the total categories). Specifically, situations *of Being in danger* are related to circumstances when attaining one's goals become very difficult or when one's goal of safety is threatened, and situations *of Morally or ethically challenged* are related to circumstances when one's goal pursuit is not socially tolerated.

Thirteen highly similar situation categories were found across two samples (26 situation categories or 38% of the total categories). These categories were identified across Chinese and American samples within one list of idioms, but not across the lists. Among these categories, *Starting out* is related to goal initiation and *Turning bad to good* describes situations in which initial failure is overcome and success is achieved. *At a standstill*, *Being threatened*, and *Having no resolution* are related to the kinds of situations in which goal pursuit is blocked. *Having necessary skills* and *Achieving with ease* are related to having ability to attain one's goals. *Being socially inappropriate* and *Deception* are related to circumstances surrounding pursuit of one's goals in a socially inappropriate manner. *Separation* and *Having conflicting interests* are related to circumstances when one's goal pursuit is not supported by others. And finally, *Enduring humiliation* is related to circumstances when one strategically endures humiliation to achieve one's goals (either avoiding threat or achieving a positive outcome), *and Making up for previous bad behavior* is related to circumstances when one tries to regain social support in pursuing one's goals.

Taken as a whole, the categories of situations identified across the four cluster analyses seem to be characterized by various aspects of what happens to people's goals, and people's plans in pursuing their goals. They are about such things as whether goals succeed or fail, the trajectory of goal pursuit, constraints on one's goal pursuit, relationships among goals (both intra and inter individually), and whether people have good (or bad) plans and whether they are carried out competently.

At the highest level in all the solutions is the broad distinction between goal success and goal failure. At the 17-cluster level, we see a large number of specific situation categories about the trajectory of goal pursuit (how goal pursuit progresses over time or what happens during one's goal pursuit). For example, some sets of situations are about initiations of goal pursuit (*Starting out*), and some others are about one's goal being stymied or blocked (*Being at a standstill*, *Having no resolution*, *Being overwhelmed*, and *Losing direction*). Other sets of situations refer to making up for slow initial progress (*Catching up from behind*), and some others talk about overcoming obstacles and reversing an initial setback (*Turning bad into good*, *Reaching satisfaction*, and *Unexpected luck*).

In addition, a variety of constraints on one's goal pursuit can be identified in sets of situations such as dealing with or avoiding danger (*Being threatened*, *Being in danger*, and *Being intimidated*), urgency of goal pursuit (*Being urgent*), overcoming pressures in

competitions (*Victory over others*), and having little constraint in pursuing one's goals (*Achieving with ease*, *Seizing opportunities*).

Other situations have to do with various kinds of inter- and intra-individual relationships among goals. For example, some sets of situations deal with conflict between people (*Having conflicting interests with others*) and others with compatibility between people (*Being compatible*, *Reunion*). Still others deal with the role of strong social bonds (*Having strong social bonds*) or conversely, with social separation (*Separation*).

Additionally, a large number of situations describe a wide range of aspects of people's plans. For example, many situations describe circumstances when people have bad plans or lack plans (*Lack of vision*, *Bringing trouble to oneself*, and *Being punished for one's own fault*), or else execute their plans badly (*Missing opportunities*, *Being too late to do anything*). Others describe circumstances where people plan well (*Taking precautions*) or have the necessary skills to execute their plans (*Having necessary skills*, *Having strong commitment*). Some other situations describe types of plans, such as enduring humiliation to survive or succeed (*Enduring humiliation*) or atoning for previous bad behavior (*Making up for previous bad behavior*). And finally, a large number of situations describe unethical, immoral, socially inappropriate, or deceptive plans (*Deception*, *Morally or ethically challenged*, *Being socially inappropriate*).

Furthermore, there are three major distinctions that appear repeatedly at different levels of the hierarchy between the 2- to 17- cluster solutions. The first distinction, as we already noted, is a robust one of whether one's goals succeed or fail. Across different levels of abstraction, this distinction is typically characterized by situation categories such as *Achieving one's goals*, *Having necessary skills*, *Victory over others*, *Achieving with ease*, and *Reaching satisfaction* for goal success, and situation categories such as *Failing*, *Being overwhelmed*, *Being in danger*, *Being threatened*, *Being intimidated*, *At a standstill*, and *Having no resolution* for goal failure. Another distinction, although it appears less robust across different levels of abstraction, seems to deal with whether one's goal pursuit is, or is not supported by others. This distinction is characterized by situation categories such as *Having strong social bonds* and *Reunion* when one's goal pursuit is supported by others, and situation categories such as *Separation* and *Having conflicting interests with others* when one's goal pursuit is not supported by others. A third distinction or feature concerns social appropriateness. For instance, the situation category of being socially inappropriate seems to be fairly robust. And across different levels of abstraction, this feature can be found in other categories such as *Morally or ethically challenged* and *Deception*.

Overall, on the 17-cluster level and among the 68 total situation categories identified, 52 (about 76%) were replicated in from two to four samples. Failures to replicate categories were almost entirely between lists of idioms rather than between groups of participants (cultures). Few cultural differences were found. This may suggest that at the abstract and psychological level, Chinese and Americans distinguish situations in similar ways. More importantly, examination of the clustering results suggests that, for the abstract psychological situations described by Chinese idioms, goal processes, or what happened to people's goals, are a central organizing principle of the distinctions that people of different cultures made across different idiom lists.

6. Discussion

Some overlap can be found between previous taxonomies of situations and the current taxonomy of situations from Chinese idioms. On the broadest level, several taxonomies

seemed to also suggest a positive versus negative distinction among situations, or from a goal process perspective, whether or not one's goals succeed or fail (Forgas, 1976; Magnusson, 1971; Ten Berge & De Raad, 2001, 2002). Further, situations of intimacy (Battistich & Thompson, 1980; Eckes, 1995; Forgas, 1976; Van Heck, 1984, 1989) are reflected in the situations *of Having strong social bonds* in the current taxonomy. Situations of interpersonal conflict (Ten Berge & De Raad, 2002;Van Heck, 1984, 1989) and competition (Eckes, 1995) are related to the situations *of Having conflicting interests with others* in the current taxonomy.

Interestingly, however, the taxonomy of situations from Chinese idioms characterized by goal processes does not capture many of the distinctions in previous taxonomies that seem to be based more on nominal settings or life domains, for instance, the Home–Family, Friends–Peers, Relaxation–Recreation–Play, Work, School, Alone situations in Pervin (1976) work, and Recreation, Traveling, Rituals, Sport, Excesses, Serving, Trading situations in Van Heck (1984, 1989) work. This may, as we discussed earlier, be due to the abstract nature of the idioms that we sampled. Consistent with the lexical hypothesis offered by Galton, it may be the case that although the specific time, location, and people involved in concrete everyday settings are constantly changing, only the most distinctive psychological meanings remain constant and are instantiated as single term idioms. As a result, the idioms seldom describe the kinds of nominal settings captured in previous taxonomies. Rather, they tend to describe the psychological essentials that cut across a wide range of nominal situations. Our results, in this regard, suggest that goal processes, or what happened to people's goals, are central to these psychological essentials that cut across diverse everyday settings.

Further comparisons can be made between our results and Murray's (1938) classic list of environmental press and Kelley et al. (2003) recent atlas of interpersonal situations. For Murray, press is fundamentally a beneficial or harmful process (Murray, 1938, p. 290). Our results are consistent with this conceptualization in showing that on the broadest level, people tend to classify situations based on goal success or failure. On more concrete levels, however, many presses in Murray's list tend to focus on specific kinds of goals, for examples, affiliation, nurturance, sex, and illness. In contrast, most situations that we found in the Chinese idioms tend to focus on more abstract aspects of what happens to people's goals (e.g., success, failure, and overcoming obstacles), rather than on the specific kinds of goals people have. Kelley et al.'s work in interpersonal situations, on the other hand, is quite different from Murray's work or our own. While Kelley et al., also focused on more abstract aspects of situations, much of their characterization is in terms of abstract payoff matrices in interpersonal situations, rather than on the kinds of goals people have or what happened to people's goals.

Goals as a fundamental component of situations have been suggested by a number of authors in the personality and social psychology literatures (e.g., Argyle et al., 1981; Baron & Boudreau, 1987; Cantor, 1990, 1994; Chulef et al., 2001; Dweck, 1996a; Grant & Dweck, 1999; Miller et al., 1994; Miller & Read, 1987, 1991; Murray, 1938; Pervin, 1983, 1987, 1989, 2000; Read, Jones, & Miller, 1990; Read & Miller, 1989a, 1989b;Read, Miller, & Jones, 1990). In Pervin (2000) work, for example, situations categorized by everyday nominal settings were considered incapable of capturing the idiosyncratic nature of how people organize situations. Instead, "perceptions of opportunities for attaining goals in terms of environmental affordance" (p. 259) are more important for personality functioning. In delineating situation structures in relation to person structures, Read and Miller (1989a)

argued that "the chief component of a situation is the goals whose satisfaction it affords" (p. 434). In suggesting a common language between personality and social psychology, Cantor (1994) noted: "Different situations afford, encourage, demand, and discourage particular problems to be pursued, and individuals' personalities are marked by their responsiveness to those particular affordances" (p. 238).

In the past, methods for the assessment of the person were far more advanced than assessments of situations (Bem & Funder, 1978). Unfortunately, the lack of adequate assessments of situations continues today (Furr & Funder, 2004). From one perspective, the current taxonomy of situations characterized by goal to past taxonomies of situations that focused more on nominal settingprocesses provides direct implications for assessing situations. In contrast s, the current taxonomy maintains that in principle, situations across diverse nominal settings are similar because they afford one's goal attainment to a similar degree, and situations are dissimilar because they afford one's goal attainment to a dissimilar degree. For person–situation interaction research, researchers may therefore consider measuring the person in terms of what goals people have (e.g., Chulef et al., 2001; Dweck, 1996b; Dweck & Leggett, 1988), and the situation in terms of what may happen to people's goals; for example, by using the specific distinctions identified in the current taxonomy of situations.

Nevertheless, we do not argue that the distinctions identified in the current taxonomy represent an exhaustive list of all the distinctions that one can find across all situations. Nor do we consider that goal processes are the only way to conceptualize psychologically meaningful situations. There are undoubtedly multiple ways to think about situations. The current taxonomy of situations only suggests that, for the diverse everyday situations captured by the abstract idioms, goal processes are a central organizing principle in differentiating them.

It is also important to note several limitations of the current work. First, the hypothesis that English and other Western languages may have a scarcity of single terms for labeling situations, although suggested by Jones and Nisbett (1971) and other prominent researchers (Bem & Allen, 1974; Ickes et al., 1997; Snyder & Cantor, 1998), is a hypothesis that has not been empirically tested. Although our work found a large set of single terms for situations in Chinese idioms and translated them into easily understood English equivalents, we are not arguing that Chinese idioms of situations are the only source for a language of situations. Much can be done in investigating other languages for single terms that describe situations. Take the English idioms, for example; while they rarely occur as single terms, we have already noted some overlaps between English and Chinese idioms in describing situations. This suggests that English idioms may also afford a rich set of situation descriptions. If so, taxonomies of situations from English idioms can also be developed. Like the fact that personality psychologists investigated trait terms across a number of languages, it is desirable to study situational terms in different languages. As a result, a global structure of situations may be identified based upon lexical studies of a number of different languages.

Second, despite the fact that we found very few differences in how people across different cultures categorize situational idioms, this may well be due to the abstract nature of the idioms. Specifically, although Americans and Chinese may be fairly similar in categorizing abstract psychological situations, they may be very different in constructing and categorizing concrete everyday situations. It is conceivable that people with different backgrounds may indeed live in very different worlds. On a concrete everyday level, people from different

cultures, ages, genders, jobs, income levels, personalities and so forth may experience and interpret situations in very different ways.

Third, the importance of developing a well-accepted definition of situations needs to be reiterated here. Although personality psychologists have reached a reasonable (although not complete) consensus in defining the structure of traits, the entire enterprise of constructing taxonomies of situations is still feeling its way in developing a well-accepted definition of situations. The current work therefore had to adopt a broad definition of situations. Operationally, we tried to include all idioms that describe naïve understanding of situations. Over time and sustained efforts in this line of research, consensus in defining situations may be reached.

Much has been done in conceptualizing and taxonomizing person variables. We believe more efforts need to be devoted to conceptualizing and taxonomizing situations. Adequate taxonomies of situations can facilitate the development of personality science in a variety of ways. From Mischel and Shoda (1999) perspective, for example, personality is manifested in terms of if-then contingencies of the situations and behaviors. In other words, a particular individual's personality characteristics should be best captured in a particular set of situation–behavior patterns. Unfortunately, the situation side of that contingency is much less well understood and conceptualized than it should be, making it difficult to systematically identify and study such situation–behavior patterns. If adequate taxonomies of situations are established, we shall be much more confident in our search for the major situation–behavior patterns where major personality characteristics are manifested.

To illustrate, Fleeson (2001) nicely demonstrated in a recent paper that individuals systematically express almost all Big-Five traits on all levels in everyday behaviors. The trait extraversion, as an example, was shown to be responsive to situation variables of time of day and the number of others present. Similarly, Moskowitz and Zuroff (2004) showed that individuals expressed more flux in dominant behaviors in situations of interacting with many unique partners or with equal number of men and women. However, in neither paper were the choices of situations made on a principled theoretical basis. Instead, the choice seems to have been largely intuitive. If adequate taxonomies of situations are established, researchers can examine the interactions between personalities and situations in much more systematic manner. Further, issues such as what kind of situations strongly encourages or discourages individual differences, and what kind of situations is normatively associated with what kind of personality traits can also be systematically examined. Answers to such questions may have wide implications for our understanding of personality functioning and personality judgment.

Perhaps more importantly, behavioral consequences of the person and the situations can be more systematically examined. In a recent paper, Furr and Funder (2004) showed that whether situations are defined subjectively or objectively, people behave more similarly in similar situations. If adequate taxonomies of situations are provided, more research can be done to investigate issues such as why situations are similar or different from each other, the degree of behavioral consistencies as a function of situation similarities or differences, and the kinds of behaviors normatively associated with particular situations. Just as Lewin suggested, behaviors may be best understood in terms of person–situation interactions, and more needs to be done to reveal systematic patterns of situation–behavior relationships.

To summarize, the current work examined a rich set of single terms in Chinese idioms that describe situations, provided a taxonomy of situations based on the idioms, and

identified principles, largely based on what happens to goals, by which people categorize the situations. This work invites more attention to the much under-researched domain of systematically conceptualizing and taxonomizing situations. Ultimately, with well-established taxonomies of personality and situations, the ways in which person and situation interact will be more completely understood.

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