# Competitive Tension: The Awareness-Motivation-Capability Perspective*

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January 14, 2005

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ABSTRACT

This paper conceptualizes and investigates competitive tension, or the degree to which a given rival is considered to be in direct competition with a focal firm. Taking the awareness-motivation-capability perspective, the study finds that three firm-dyad constructs, size disparity, market commonality, and resource similarity, are significant predictors of perceived competitive tension. The paper contributes to competitor analysis and bridges the cognitive classification and competitive dynamics research.

<u>**SUBMITTED AS A RESEARCH NOTE**</u>

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Competitor analysis, particularly competitor identification, is central to strategy

and organization research (Porter, 1980; Hitt, Ireland, & Hoskisson, 2004). The literature

has explored a number of important topics, including conjecture variation (Amit,

Domowitz, & Freshtman, 1988), competitor conceptualization (Porac & Thomas, 1990)

and blind spots (Zajac & Bazerman, 1991), and has made advances in areas such as the

theoretical integration of competitor analysis and dynamic competitive behavior (Chen,

1996). Nonetheless, it tends to treat competitors, at least those within the same "primary

competitive group" (Porac et al., 1989: 414), as homogeneous or to classify them as

direct or indirect competitors (Peteraf & Bergen, 2003). Such basic concepts as threat,

pressure, and intensity are often considered in the aggregate industry (or market), or

general competitive, context. The research has fallen short in differentiating the varying

degrees of pressure that individual rivals may impose on each other.

Two parallel lines of research have developed in the study of competitor and

interfirm competition: one takes a perceptual or cognitive approach, the other relies on

objective indicators. In the former case, cognitive classification research (see summary

by Labianca, Fairbank, Thomas, Gioia, & Umphress, 2001), based on managers'

perceptions, has contributed to the rigorous construction of strategic group (Reger &

Huff, 1993) and competitive group (Porac, Thomas, Wilson, Paton, & Kanfer, 1995).

Studies have found that organizations within these cognitively derived competitive

groups more closely resemble each other than do organizations in other groups (e.g., Lant

& Baum, 1995). Limited effort, however, has been made to conceptualize and examine

empirically the tension a firm experiences vis-à-vis its rivals; that is, how a firm "feels the pressure" from its competitors (Porter, 1980: 7). This gap is problematic because how opponents view each other is critical in predicting attack (Ferrier, 2001) and retaliation (Chen & MacMillan, 1992), among other forms of interfirm competition.

Research in competitive dynamics (see review by Smith, Ferrier, & Ndofor, 2001), on the other hand, has taken the dyadic action-response as the focal point of analysis to identify empirically certain factors that can predict competitive behavior in the marketplace and consequent organizational performance (Young, Smith, & Grimm, 1996; Baum & Korn, 1999). A diverse set of organizational and strategic variables has emerged that centers on awareness, motivation, and capability, three key drivers of interfirm competition. Despite such progress, the research has concentrated on observable indicators and behaviors derived from public information, leaving unexplored central questions involving perceptual construction of competitor and competitive relationship.

This paper, focusing on primary competitive group, or "a collection of firms who define each other as rivals" (Porac et al., 1989: 414), sets out to address a critical question in competitor analysis: To what extent can the objective indicators derived from the awareness-motivation-capability (AMC) theoretical perspective explain perceived competitive tension, defined here as the degree to which a given rival is considered to be in direct competition with a focal firm? The paper proposes that perceived competitive tension is influenced by three firm-dyad constructs, size disparity, market commonality, and resource similarity, each of which corresponds to one of the AMC components. Through perceptual consideration of competitive tension and objective treatment of the

theoretically-derived predictors of tension, this research aims to bridge these two

approaches to the study of competitor.

## THEORETICAL BACKGROUND AND HYPOTHESES

Both the perceptual perspective taken by cognitive classification researchers and

the objective view of competition adopted by competitive dynamics research have

advanced our understanding of interfirm competition and competitor analysis.[1]

Researchers have made some early efforts to connect these two perspectives.

**Linking perceptual and objective views**. Transforming the question "who

competes with whom" (as emphasized by the objective perspective) into "who defines

whom as a rival," Porac et al. (1995) validated their perceptual construction of competitor

through some objective attributes. Reger and Huff (1993: 119) concluded that "cognitive

groups tend to reinforce economic groups"; Reger and Palmer (1996) compared

managerial perceptions to objective measures, revealing a gap between managers'

structural and cognitive views of their competitors. Analyses have also shown that

managerial perceptions of competitive groups could be static even when major upheavals

were creating objective changes in the competitive environment (Odorici & Loma, 2001).

Collectively, these studies suggest that both structural and cognitive factors influence the

stratification of an industry into strategic and/or competitive groups.

While competitive dynamics research has focused mostly on the objective reality

of competition and competitor relationship, an important implicit assumption made by

this research stream is that managers (or firms) within an industry, or within a

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[1] From a measurement perspective, the point of Boyd, et al. (1993) is noted: "We refer to objective measures as archival measures because measures always entail some element of subjectivity" (p. 205). This study, however, follows the convention and uses the term "objective."

competitive set, all recognize their interdependence and use this recognition in formulating their strategies and undertaking actions (Porter, 1980; Gimeno & Woo, 1999; Baum & Korn, 1999). Going a step further, researchers have begun to stress the need to evaluate this implicit assumption and to complement the use of objective indicators with managers' self-assessments and perceptual evaluation of their competitive environment (Jayachandran, Gimeno, & Varadarajan, 1999; Ferrier; 2001).

Perceptual assessment of competitor is critical because ultimately a firm takes action in accordance with the cognitive map it constructs (Dutton & Jackson, 1987; Reger & Huff, 1993). Due to the sensitivity of information, however, it is often difficult for researchers to ascertain how strategists identify and prioritize their competitors. In the absence of perceptual competitor information provided by decision-makers, it becomes imperative to identify objective indicators, especially theoretically grounded ones, that can be used to explain how a firm differentiates among a set of its direct rivals.

Following the cognitive research stream, this paper takes a perceptual approach to the study of competitive tension. As noted by Porac et al. (1989: 398), this stream "portray(s] human activity as an ongoing input-output cycle in which subjective interpretations of externally situated information become themselves objectified via behavior." As a result, "[managerial] cognition and motivations systematically affect the processing of issues and the types of organizational actions taken in response to them" (Dutton & Jackson, 1987: 76). In contrast to cognitive research conducted at the group or industry level, the analytical focus of the current research is at the pairwise, dyadic level. This approach to the study of competitive tension is premised on the AMC theoretical perspective, from which a set of firm-dyad constructs can be developed for predicting the

different degrees of pressure two firms exert on each other.

**Awareness-motivation-capability (AMC).** By conceptualizing competition as the exchange of moves and countermoves, competitive dynamics studies (Smith et al., 2001) have made some important advances. First, competitor analysis is carried out in a pairwise fashion, taking a focal firm's perspective. This dyadic approach constitutes a fine-grained examination that complements the conventional structural (Porter, 1980) or group approach (Cool & Schendel, 1987) in competitor research. Second, research has identified awareness, motivation, and capability (Smith et al., 2001) as three underlying drivers of interfirm competition, which together constitute the basis for a promising integrative theoretical perspective.

The roots of the AMC perspective are found in the literatures of organizational cognition and action (Dutton & Jackson, 1987), strategic interdependence (Porter, 1980), and the resource-based view of the firm (Barney, 1991). Awareness refers to a firm's cognizance of its competitors and its general competitive environment; motivation accounts for the incentives that drive a firm to engage in competition with a specific rival; and capability, shaped by the firm's resource deployment and its decision-making processes, provides the firm with the capacity to compete. Each of the AMC components is manifested in a range of variables, including action visibility and firm size (Chen & Miller, 1994) for awareness, territorial interests in different markets (Gimeno, 1999) for motivation, and execution difficulty and information processing (Smith, Grimm, Gannon, & Chen, 1991) for capability.

So far, however, the AMC components have yet to be integrated and formalized as a theoretical perspective for the study of competitor analysis. The current research sets

out to capture the dyadic nature of interfirm competition by using three variables derived from the AMC perspective: size disparity, market commonality, and resource similarity.

Organizational size has long been considered an important competitive concern (Hambrick, MacMillan, & Day, 1982). Research has shown that larger firms differ from their smaller industry counterparts in terms of competitive behavior attributes such as propensity for action and execution speed, and are more recognizable in the industry than their smaller counterparts (Chen & Hambrick, 1995). Size disparity, or the relative size difference between a given competitor vis-à-vis the focal firm (Baum & Korn, 1999), points to the awareness aspect of the AMC framework. At the same time, competitive dynamics research identifies market and resource as the primary concerns in interfirm competition. Baum and Korn (1999: 251-252) stress the significance of multimarket contact (Gimeno, 1999) and argue that it is "*not* an aggregate property of industries, markets or firms; it is a property of the [market] *relationship* between two firms." Similarly, research rooted in the resource-based view of the firm (Barney, 1991) has attempted to differentiate among firms with respect to their resource endowments and to capture their idiosyncratic relationships.

To integrate the market and resource perspectives for theoretical advancement in interfirm competition, Chen (1996) proposed two firm-dyad constructs: market commonality (or the degree of a competitor's presence in the markets in which it overlaps with the focal firm) and resource similarity (or the extent to which a given rival possesses strategic endowments comparable to those of the focal firm), with the former corresponding to motivation and the latter to capability. Though conceptually important, these two constructs have not been subjected to empirical examination. Without such

investigation, it is not conclusively clear what roles they play in shaping a firm's consideration of its various rivals and their consequent rivalry in the marketplace.

**Hypotheses**

This section applies the AMC perspective and examines how size disparity, market commonality, and resource similarity influence perceived competitive tension between a focal firm and a given rival.

**Size disparity and competitive tension.** In this paper, size disparity reflects the relative size of a given competitor in comparison with the focal firm. Organizational size long has been considered one of the most important contingent variables affecting a firm's strategy and structure (Hambrick, MacMillan & Day, 1982). Largeness is often associated with market power (Hambrick et al., 1982), organizational slacks (Singh, 1990) and visibility (Smith, et al., 1991). Large firms are more likely to initiate massive attacks on their competitors and are committed to protecting their reputation when under attack (Chen & Hambrick, 1995). Conventional strategy wisdom holds that size is a major source of competitive threat. All these considerations increase the perceived competitive tension created by a larger opponent.

In a pair of firms, size disparity raises the focal firm's awareness of competitive tension emanating from the competitor (Chen & Miller, 1994)—the greater the disparity, the more likely the focal firm will recognize its competitor's actions and its potential threat.[2]

**Hypothesis 1: The greater the size disparity of a competitor relative to a focal firm, the greater the competitive tension perceived by the firm.**

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[2] In the current research, size disparity takes into account the relative, rather than the absolute, differences between a given competitor and the focal firm.

**Market commonality and competitive tension.** Porter (1980: 88) noted the significance of market interdependence to competitive intensity: "A central characteristic of competition is that firms are mutually dependent: firms feel the effects of each other's moves and are prone to react to them." Baum and Korn (1996) and Gimeno (1999) have stressed the role of shared markets in capturing market interdependence, a major source of competitive threat. Market commonality represents a refined view of market interdependence and mutual dependence, allowing the existence (or possibility) of competitive asymmetry between a pair of firms (Chen, 1996).

Two firms are head-on opponents and will be motivated to act (or react) against each other if they compete directly in many markets, and, more important, if each is a key player in markets vital to the other. Any challenge initiated by rivals with high market commonality would be considered a direct threat (Dutton & Jackson, 1987); and the positive relationship between a rival's dependence on the market under attack and its likelihood of response supports the prediction that high market commonality leads to strong competitive tension (Chen & MacMillan, 1992). Baum and Korn's (1999) finding that rivals with high multimarket contact are less likely to exit each other's markets (showing their commitment to staying in the race) provides additional evidence.

**Hypothesis 2: The greater a competitor's market commonality with a focal firm, the stronger the competitive tension perceived by the firm.**

**Resource similarity and competitive tension.** Sustained competitive advantage in the market is rooted in the firm's internal resources and capabilities (Barney, 1991; Peteraf, 1993). Ideally, a firm would like to undertake initiatives that fully utilize its

resource-based advantages, or its "heterogeneous asset bases" (Rumelt, 1984). Firms with similar resources are likely to have comparable strategic capabilities and competitive stances, and thus are likely to target similar sets of customers (Miller & Shamsie, 1996). Heil and Robertson (1991) showed that rivals with similar strategies and structures exert great pressure on each other.

Strategic resources are generally rare and scarce within an industry (Barney, 1991); thus two firms with similar resource needs are more likely to view each other as direct competitors. As Porac and Thomas (1990: 225) noted: "Two organizations are similar if they share important attributes and hence tap the same resources in the task environment. Because critical resources are usually scarce, similar organizations are usually competitively interdependent."

These arguments are in line with Gimeno and Woo's (1996) finding of a positive relationship between the strategic similarity of firms and the degree of their rivalry. Moreover, the more similar such a rival is to the firm, the more easily that rival will be able to understand and anticipate the firm's intentions and movements, posing a greater potential challenge. Those rivals with which the firm has the most comparable resource endowments are the most capable competitors and the ones who will impose the greatest pressure on the firm.

**Hypothesis 3: The greater a competitor's resource similarity with a focal firm, the stronger the competitive tension perceived by the firm.**

**Significance of market commonality.** Resource similarity and size disparity, while critical, reflect only resource endowment and organizational scale, while market commonality captures the specific relationships between a pair of firms in the

marketplace and taps directly into the motivational components. Motivation is a prerequisite of behavior and a stronger and more direct predictor of competitive actions and responses than are capability and awareness (Chen & Miller, 1994). Market relationship is the most significant factor affecting conjectural variations and sphere of influence (Gimeno, 1999). Two firms will be most motivated—and will be most vigilant of the tension created by its opponent—if they compete in similar markets and develop comparable market focuses. As a result, firms having high market commonality are diametric competitors. In sum, although awareness and capability are prerequisites in a rivalrous situation, a firm's motivation to engage in competition with a given rival plays a vital role in determining the firms' competitive relationship.

**Hypothesis 4: A competitor's market commonality with a focal firm is the primary factor in explaining competitive tension perceived by the firm.**

## RESEARCH METHODS

### Sample

The hypotheses were tested using information from the 13 major airlines that compete against each other in various markets (or city-pairs) in the U.S. This sample was selected because of the acknowledged competitive relationships among these major players, rich sources of public information, well-defined markets, and identifiable strategic resources (Bailey, Graham, & Kaplan, 1985; Gimeno, 1999).

### Measurement

The unit of analysis is a pair of firms. The measure for competitive tension is based on perceptual assessments provided by airline executives and experts, while the

measures for size disparity, market commonality, and resource similarity are derived from objective data based on public information.

**Competitive tension**. To assess the competitive tension a given airline experiences from each of the other sample airlines, the research used a questionnaire mailed to 60 airline informants (44 senior vice presidents and higher-ranking executives and 16 security analysts) in 1991.[3] Competitor assessment by inside executives is a particularly sensitive task in the airline industry. Because it is difficult to get airline executives to reveal competitor information, opinions from outside experts are necessary. Among outside experts or key industry informants (e.g., consultants and regulators), security analysts have been found to be the most reliable (in terms of interrater reliability) and accurate (in terms of closeness to "true scores" offered by inside executives) in a study that assesses the expertness of various groups of outside informants (Chen, et al., 1993).

The questionnaire was pre-tested and professionally produced and distributed, and included two follow-up mailings. These factors may account for the 42% overall response rate, considered high for a mail survey (Warwick & Lininger, 1975) and very high in the industry, in the opinion of airline executives. Twenty-five respondents (17 executives representing nine airlines, a response rate of 39%, and eight analysts, for a 50% response rate) completed and returned questionnaires; of these, 23 were useable (16 for executives and seven for analysts). A comparison of respondents and non-respondents suggested they did not differ in their observable characteristics, e.g., firm size and industry and company experience; overall, respondents' average length of industry

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[3] These individuals had participated in a previous airline study that evaluated various competitive moves taken by airlines (Chen & MacMillan, 1992; Chen, Farh & MacMillan, 1993).

experience was more than 25 years.

To construct a competitive tension measure for each airline, respondents were asked to take the position of the focal airline (with executives rating their own companies and analysts rating each of the sample airlines) and to identify and rank its top five competitors from a list of all 12 other competitors. In the scoring scheme, the airline rated as the top-ranked competitor of the focal airline received a score of 5; second, a score of 4; etc. Those not included in the ranking received a score of 0. Scores were then averaged across all responses; thus each score reflected the degree of competitive tension a focal airline experienced from a given competitor.

Because the perceptual measures were aggregated for each pair of firms, there was concern about the extent to which the average score for a given pair across all the raters represented a firm's perception toward each of its competitors. To check for the internal consistency of the raters' evaluations, we examined the intraclass correlation coefficients (ICCs) for each of the 13 airlines. Shrout and Fleiss (1979) describe several types of ICCs. This research used ICC (3,1), which applies to cases in which "all targets [here direct competitors to a focal airline] are rated by the same judges and the judges were the only ones of interest" (1979: 421). The ICC scores were all significant at the .05 level or better for all airlines.[4]

Appendix A presents the results of competitive tension mapping among pairings of the 13 airlines, 156 pairs altogether. The left-hand column is a list of focal firms. The indexes of relative competitive tension between each focal firm and the other airlines are

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[4] This version of the ICC can be viewed as the average correlation between a single respondent's rankings of the relative competitive tension from a set of direct competitors to a focal airline and another respondent's rankings of the relative competitive tension from the same firm. The ICC can thus serve as a point indicator of the agreement of ratings among a group of judges (James, 1982).

presented from left to right. For example, according to Appendix A, from United's (UA) point of view, the competitive tension of American (AA) is 4.71 (11th row, first column) and that of Delta (DL) is 2.43 (11th row, forth column). Thus, from UA's viewpoint, it experiences greater tension from AA than from DL.

**Size disparity.** Size disparity is defined as the relative organizational size between a given competitor and the focal firm. It is measured by the log of a given airline's average assets in 1988-1990 divided by the focal airline's average assets during the same period (i.e., ln (airline j's average assets in 1988-1990/the focal airline i's average assets in 1988-1990)).

**Market commonality**. Market commonality is defined as a competitor's degree of presence in the markets where it overlaps with a focal firm. This research used the commonly defined market route, or city-pair (Gimeno, 1999; Baum & Korn, 1996), and sampled the top 10,000 city-pairs in terms of revenue passenger miles. Market commonality for a given pair of airlines can be calculated as:

$$M_{ij} = \sum_{k=1}^{10,000} [(P_{ik}/P_i) \times (P_{jk}/P_k)] \tag{1}$$

where  $M_{ij}$  = Market commonality that airline j has with the <u>focal</u> airline i
$P_{ik}$  = Total number of passengers served by airline i in route k
$P_i$   = Total number of passengers served by airline i across all routes
$P_{jk}$  = Total number of passengers served by airline j in route k
$P_k$   = Total number of passengers served by all airlines in route k
k    = A route jointly served by airline i and airline j

In calculating $M_{ij}$, the first term ($P_{ik}/P_i$) captures the strategic importance of a shared market to the focal firm (i). The second term ($P_{jk}/P_k$) reflects the market share of a given competitor (j) in this shared market. The information was obtained, through data extraction and manipulation, from the U.S. Department of Transportation's *Origin-*

*Destination Survey of Airline Passenger Traffic*. The research used a detailed, market-by-market assessment across all shared markets to develop each competitor's market commonality with a focal airline. The results were "normalized" so that the sum of the commonality indices for all of a given firm's competitors was equal to 1. The three-year average of market commonality measure (1988-1990) was used in the final analysis.

**Resource similarity**. To measure this variable, the research used one of the most vital strategic resources in the airline industry, fleet structure (Taneja, 1989). Acquisition of various types of aircraft and development of fleet structure are the most critical strategic decisions facing airline executives. In 1989, 31 major types of aircraft were used, conventionally classified on the basis of such parameters as "stage length" (or the distance of flying) and number of passengers carried (Taneja, 1989). Resource similarity for a given pair of airlines can be calculated as follows:

$$R_{ij} = \sum_{m=1}^{31} [(A_{im}/A_i) \times (A_{jm}/A_m)] \tag{2}$$

where  $R_{ij}$  = Resource similarity that airline j has with the focal airline i
$A_{im}$ = Total number of type m aircraft operated by airline i
$A_i$  = Total number of aircraft operated by airline i overall
$A_{jm}$ = Total number of type m aircraft operated by airline j
$A_m$ = Total number of type m aircraft operated by all airlines
m   = A type of aircraft operated by both airline i and airline j

The aircraft information was obtained from *"TPFS" Turbine Airliner Fleet Survey* (1990). The construction of the resource similarity index is similar to that of the market commonality index, and the results were also converted so that the sum of the similarity indices for all of a given firm's competitors was equal to 1.

**RESULTS**

The individual pairwise figures (like those appearing in Appendix A, which reflects competitive tension between a pair of firms) constitute the basic data points (n=156). Table 1 reports means, standard deviations, and correlations. Table 2 presents the regression coefficients (standardized beta) of least-squares dummy variables (LSDV) regression analyses, and related statistics resulting from testing Hypotheses 1 through 4.

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Insert Tables 1 and 2 about here
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It is clear from Tables 1 and 2 that Hypotheses 1, 2, and 3 are supported. Table 1 shows that size disparity, market commonality, and resource similarity correlate positively with competitive tension. These results are borne out by models 1 through 3 of Table 2, which regresses competitive tension against its three predictors (and 12 airline dummy variables)[5]. The overall regression and the main effects attain significance at beyond the .001 level in the predicted direction. Hypothesis 1 is significant, suggesting that the greater a given competitor's size in comparison to the focal firm, the greater the tension perceived by the firm. Consistent with the predictions, the greater a rival's market commonality with the focal firm (Hypothesis 2), and the greater a rival's resource similarity with the focal firm (Hypothesis 3), the stronger the competitive tension it experiences from that rival.

Hypothesis 4 is supported, shown by the regression coefficients in model 4, Table 2: when all the three independent variables are in the same model, the standardized

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[5] Because a set of fixed-effect carrier dummies was included in the model, variance inflation factors (VIFs) were calculated for each independent variable to check for the multicollinearity problem. Except for the size disparity and the carrier dummy, no other independent variable has a VIF exceeding 2.5.

coefficient of market commonality remains relatively unchanged, while the coefficient of size disparity is substantially reduced and the coefficient of resource similarity becomes insignificant. The table also shows that $R^2$ for the overall model is .65 (F=21.21, p< .001), suggesting that the objective indicators of size disparity, market commonality, and resource similarity have a significant relationship with perceptual measure of competitive tension.[6]

## DISCUSSION

This paper conceptualizes competitive tension, a construct intended to close a significant gap in the strategy and competitor analysis literature (Porter, 1980; Hitt et al., 2003): how firms within a primary competitor group view each other and how research can differentiate the varying degrees of pressure rivals may impose on a firm (Porac et al., 1989). The firm-dyad conceptualization of competitive tension offers a middle ground between firm and group or industry. This approach contrasts with the prevailing consideration of competitors as largely homogeneous. It provides a refined conceptualization of competitor by differentiating the varying degrees of pressure each of a firm's competitors poses on the firm.

The promise of the AMC perspective is revealed through integrative consideration of the three components derived from this perspective and by the demonstration of their influence on competitive tension. The AMC framework is a natural outgrowth from findings in competitive dynamics research, and each of its components has been shown to be empirically significant in explaining competitive behavior (Smith et al., 2001). This

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[6] We re-ran all analyses by using the competitive intensity measures constructed from airline executives' ratings of their own companies. As noted above, we had ratings from nine airlines, and the number of raters for each airline ranged from one to four. The results reported here are identical to the findings from the executive-only sample. This verification of the findings lends support for the robustness of the study.

paper attempts to put forward and test empirically this theoretical perspective. Not only does the framework have the potential to advance competitive dynamics research, it may also illuminate our understanding of interfirm action and relationship in general. Moreover, it can provide an important bridge between micro and macro organizational literature, as attempted earlier by Jackson and Dutton (1987) and Chen and Miller (1994).

Finally, through the use of AMC components as objective indicators and the treatment of competitive tension as a perceptual phenomenon, this study forges an important link between competitive dynamics and cognitive classification research (Labianca et al., 2001). Efforts of this kind, as in Reger and Palmer (1996) and Odorici & Loma (2001), are central to the advancement of both research streams. The findings here suggest that in the absence of perceptual managerial assessment of competitor, three theoretically-derived objective indicators can be used.

**Implications**

There are several important implications of this research. First, the firm-dyad conceptualization is critical because significant differences exist among firms even within the same primary competitive group. That is, each firm perceives a different degree of competitive tension with each rival, and from that firm's point of view each rival is unique. If a firm perceives high competitive tension from a rival, the seed is sown for ongoing competitive exchanges between them (Chen & MacMillan, 1992). Thus perceived tension can lead to long-term implications for industry stability (Porter, 1980). The issues raised here may help advance such research as industry and competitor analysis (Zajac & Bazerman, 1991), strategic group (Cool & Schendel, 1987; Reger & Huff, 1993), multipoint competition (Baum & Korn, 1996; Gimeno, 1999),

organizational cognition (Labianca, et al., 2001), and interorganizational relationship (Oliver, 1990).

Second, the perceptual construction of competitive tension and the consideration of three AMC predictors as objective phenomena point to a fundamental concern in strategy research: the extent to which these two perspectives may correspond. Indeed, the contrasting perspectives have been used to examine key strategy constructs such as environment (Boyd, Dess, & Rasheed, 1993), strategic group (Reger & Huff, 1993), and market structure (Baum & Korn, 1996). This study provides empirical evidence of the correspondence between the two perspectives in competitor research, while extending integrative efforts by researchers in cognitive classification (Reger & Palmer, 1996) and in competitive dynamics (Jayachandran, et al., 1999; Ferrier, 2001).

Third, the paper shows the empirical significance of market similarity and resource similarity (Chen, 1996). The importance of these two variables, challenging the conventional wisdom of organizational size as the main source of perceived threat, suggests that firms tend to experience great competitive tension not only with those rivals that are large in size or market share, but also with rivals that are active in their key markets and with those vying for similar resources. One result of examining competitors on a market-by-market and resource-by-resource basis is the simultaneous micro-macro conceptualization of competition, an important advancement in the strategy and organization literature (Baum & Korn, 1996).

There are also some practical implications of the current study. First, the AMC perspective is intuitively appealing and easily understood by strategists, who can rely on objective indicators of various kinds to assess the level of pressure imposed by rivals on a

specific competitor of interest. Similarly, a firm's clear understanding of the competitive tension originating from each of its rivals can be valuable. The firm might choose, for instance, to allocate resources in proportion to the relative pressure emanating from a given competitor. This understanding may also help the firm to be competitor-oriented: that is, to direct its strategic focus and to mobilize its organizational efforts. Finally, competitive tension may have implications for organizational performance, and research along this line will help advance the promise of this construct.

**Limitations and Future Directions**

This study takes a significant first step toward perceptual differentiation of competitors, but it may be limited by its focus only on existing rivals in an industry. Future research should consider potential or "unseen" rivals not currently in the industry (Porter, 1980). Likewise, the use of corporate insiders and outside experts may raise questions about the relative accuracy of competitive assessment. The inclusion of security analysts, reliable outside informants (Chen, et al., 1993), is due to the difficulty in obtaining sensitive competitor information in this particular industry. Nonetheless, the approach points to an interesting research avenue, namely the consideration of competition as a socially constructed phenomenon (White, 1980) and the idea that a firm's view of its competitors may be shaped by both insiders and outsiders who have a stake in, or intimate knowledge of, a firm (Porac & Thomas, 1990).

In the airlines industry, information is relatively public, and perception and objective reality tend to correspond well. This high correspondence may not be the case in other industries. In addition, there is a high correlation among the three AMC measures. This study suggests the components may be intertwined, with one or two

components influencing the other(s). Along this line, the prominent role of motivation in determining competitive relationship needs to be investigated further—by studying, for instance, the potential moderating effect of market commonality on resource similarity in determining competitive tension. It would be useful to conduct longitudinal studies, perhaps across multiple industries, to develop a fuller understanding of the complex relationship among the three components. What is now needed, it seems, is exploration of the interrelationships among awareness, motivation, and capability under various industry and market conditions and extension of this promising theoretical perspective, with the aim of developing a predictive theory not only of competitive action but of organizational action in general.

In sum, this paper examines an important missing element in current competitor research, the idea of competitive tension. Understanding how firms perceive each other from the viewpoints of size difference, market presence, and resource profile can help reveal their awareness, motivation, and capability in interfirm competition.

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TABLE 1
Means, Standard Deviations, and Correlations

|  | Mean | s.d. | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1. Size disparity | .00 | 1.87 |  |  |  |
| 2. Market commonality | .07 | .07 | .32 |  |  |
| 3. Resource similarity | .08 | .07 | .46 | .62 |  |
| 4. Competitive tension | 1.21 | 1.49 | .39 | .76 | .46 |

All correlation coefficients are significant at .001 level;
n=156

TABLE 2
Least-Squares Dummy Variable (LSDV) Regression Model

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Size disparity | .84 *** | | | .34 ** |
| | (.07) | | | (.09) |
| Market commonality | | .81 *** | | .78 *** |
| | | (1.20) | | (1.48) |
| Resource similarity | | | .46 *** | -.18 |
| | | | (1.90) | (1.92) |
| F-value | 7.26 | 16.64 | 2.03 | 21.21 |
| Prob. | .00 | .00 | .02 | .00 |
| $R^2$ | .32 | .62 | .21 | .65 |

Coefficients are standardized coefficients. Robust standard errors are in parentheses;
[+] p< .10; [*] p< .05; [**] p< .01; [***] p< .001

All models include 12 dummy variables representing each carrier; the fixed effect intercepts are not presented; n=156

# APPENDIX A

## Competitive Tension Mapping for U.S. Airlines[a]

|     | AA | AS | CO | DL | HA | HP | ML | NW | PA | TW | UA | US | WN |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| **AA** |  | 0.00 | 1.18 | 4.14 | 0.00 | 0.00 | 0.36 | 0.55 | 0.55 | 0.45 | 4.59 | 1.64 | 1.00 |
| **AS** | 1.94 |  | 0.50 | 2.88 | 0.43 | 1.44 | 0.00 | 0.88 | 0.00 | 0.13 | 4.19 | 0.38 | 2.19 |
| **CO** | 3.88 | 0.00 |  | 1.88 | 0.00 | 0.13 | 0.00 | 0.25 | 0.00 | 0.25 | 4.38 | 2.38 | 1.75 |
| **DL** | 4.56 | 0.00 | 2.11 |  | 0.00 | 0.00 | 0.00 | 1.44 | 0.00 | 0.00 | 3.22 | 2.67 | 0.33 |
| **HA** | 2.50 | 1.25 | 2.50 | 2.75 |  | 2.00 | 0.00 | 0.25 | 0.00 | 0.00 | 3.75 | 0.00 | 0.00 |
| **HP** | 2.75 | 0.13 | 1.50 | 1.75 | 0.00 |  | 0.38 | 0.00 | 0.00 | 0.00 | 4.00 | 0.38 | 4.13 |
| **ML** | 3.93 | 0.00 | 0.29 | 1.00 | 0.00 | 0.50 |  | 0.71 | 0.00 | 0.57 | 4.50 | 0.29 | 2.50 |
| **NW** | 3.71 | 0.00 | 1.71 | 2.29 | 0.00 | 0.00 | 0.00 |  | 0.43 | 0.29 | 4.71 | 1.00 | 0.00 |
| **PA[b]** | 4.29 | 0.00 | 0.43 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 |  | 4.29 | 2.43 | 0.43 | 0.00 |
| **TW[b]** | 4.17 | 0.00 | 0.78 | 0.56 | 0.00 | 0.22 | 0.00 | 0.33 | 3.72 |  | 3.61 | 0.50 | 0.67 |
| **UA** | 4.71 | 0.29 | 2.43 | 2.43 | 0.00 | 0.00 | 0.71 | 3.00 | 0.14 | 0.43 |  | 0.43 | 0.43 |
| **US** | 3.80 | 0.00 | 2.70 | 3.90 | 0.00 | 0.40 | 0.00 | 1.00 | 0.00 | 0.10 | 2.50 |  | 0.00 |
| **WN** | 4.13 | 0.00 | 2.13 | 2.63 | 0.00 | 3.88 | 0.75 | 0.00 | 0.00 | 0.13 | 1.25 | 0.00 |  |

| | | | | | |
|---|---|---|---|---|---|
| AA | - American Airlines | HP | - America West Airlines | UA | - United Airlines |
| AS | - Alaska Airlines | ML | - Midway Airlines | US | - USAir |
| CO | - Continental Airlines | NW | - Northwest Airlines | WN | - Southwest Airlines |
| DL | - Delta Airlines | PA | - Pan American World Air | | |
| HA | - Hawaiian Airlines | TW | - Trans World Airlines | | |

[a]The focal firms are listed in the left-hand column; their respective competitors are listed across the top of the table. The table should be read from left to right.
[b]These airlines have ceased operations or merged with other airlines.