



Interfirm Competition for Human Resources: Evidence from the Software Industry

Author(s): Timothy M. Gardner

Source: *The Academy of Management Journal*, Vol. 48, No. 2 (Apr., 2005), pp. 237-256

Published by: [Academy of Management](#)

Stable URL: <http://www.jstor.org/stable/20159654>

Accessed: 25/02/2014 04:48

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
<http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Academy of Management is collaborating with JSTOR to digitize, preserve and extend access to *The Academy of Management Journal*.

<http://www.jstor.org>

INTERFIRM COMPETITION FOR HUMAN RESOURCES: EVIDENCE FROM THE SOFTWARE INDUSTRY

TIMOTHY M. GARDNER
Brigham Young University

To test a model of interfirm competition for human resources, firms' responses to the loss of employees to single rivals were examined. Results suggest that attributes of hiring firms and of hired employees are associated with target firms' decisions to defend and retaliate against labor market rivals. The findings have implications for the validation of intrafirm differences in human resource systems. This study opens the door for further theorizing and modeling of interfirm competition for intangible resources.

A number of analysts have suggested that one of Wal-Mart's sources of competitive advantage is its homegrown data warehouse and inventory management systems. In 1998, Internet retailer Amazon.com hired 15 of Wal-Mart's information technology and logistics professionals intimately familiar with these systems. Alleging unfair competition, Wal-Mart responded by filing suit. Settling the lawsuit out of court, Amazon agreed to reassign most of the hired employees and refrain from actively recruiting Wal-Mart employees for 12 months (Schwartz & Salamone, 1999). Similar interactions have been observed between Microsoft and Borland; Sears and Montgomery Wards; and SAP and Siebel (Bordwin, 1999).

The exchanges between firms these anecdotes describe have the hallmarks of competitive interactions. A *competitive interaction* typically involves one firm's initiating a series of actions to gain temporary or long-term advantage over rivals, followed by a set of actions from rivals seeking to protect or regain threatened competitive advantages (Chen, 1996; Ferrier, 2001). It is generally accepted that firms compete head-to-head with rival firms for control of customers (i.e., market share) and reve-

nues (Rumelt, Schendel, & Teece, 1991). The anecdotes above suggest the interesting possibility that firms also engage in head-to-head competition for human capital.

There are a number of ways that competition for human capital may be manifested. Firms use a variety of tactics to gain advantage over labor market rivals, including initiating recruitment efforts, changing pecuniary (wages, benefits, variable pay risk) and nonpecuniary (job design, etc.) aspects of employment relationships, hiring the employees of geographic and labor market competitors, and tapping nontraditional labor markets (Rynes & Barber, 1990). These tactics impact rivals in three ways. First, such tactics decrease the number of qualified applicants attracted to rivals' open positions. Second, aggressive labor market competitors deplete rivals' human capital pools by "cherry-picking" employees with strong performance. Finally, interfirm personnel moves may result in the transfer of knowledge about operations, strategies, and customers from firms to their industry competitors (Finlay & Coverdill, 2002; Rao & Drazin, 2002).

This study departs from previous research in offering a model of competitive interaction for human resources. Strategic human resource management and competitive dynamics theories alone are inadequate to explain human capital competition. The role of human capital in head-to-head competition between rivals has not heretofore been considered. In addition to contributions to strategic and human resource management theory, practical implications both for hiring and losing firms are provided.

THEORY AND HYPOTHESES

This study examined the behavior of firms in the U.S. software industry between the years 1999 and

This study was funded in part by two grants from the Center for Advanced Human Resource Studies at Cornell University. I would like to thank my dissertation committee, Pat Wright, John Bunge, Brent Smith, and Chris Collins, for their support and guidance. Thanks also to Stuart Bunderson, David Bryce, Paul Godfrey, Hal Gregersen, Mark Hansen, Gerry Sanders, and Dave Whetten for comments on drafts of this paper. I would also like to thank the Survey Research Institute at Cornell University for their top-notch survey services. An earlier version of this paper was the winner of the 2003 Ralph Alexander Best Dissertation Award of the Human Resources Division of the Academy of Management. As to this work's content and conclusions, the usual disclaimer applies.

2002. National unemployment levels at this time were at historical lows, and labor shortages were on-going in the software industry (*ITAA News*, 2001). This scarcity, combined with changes in the fundamental relationship between employers and employees, resulted in hypercompetition in the software industry labor market. Just as hypercompetition in product-markets forces firms to shift their focus from growing markets to growing market share, intense labor market competition forces firms to shift their focus from hiring employees from pools of available job seekers to hiring experienced employees from rivals (Cappelli, 1999; D'Aveni, 1994). Such actions taken against rivals can be expected to lead to reaction (Porter, 1980).

As documented by Cappelli (1999), since the early 1990s firms have been much more willing to hire rivals' employees. Generally, a firm will hire only one employee from a specific rival, but hiring two or more employees from the same company is not uncommon (Bordwin, 1999; Cappelli, 1999; Finlay & Coverdill, 2002). Previous work on human resource competition has suggested that organizations perceive the hiring of two or more employees by the same firm as a pattern of action necessitating a competitive reaction (Gardner, 2002). Thus, the vehicle for modeling competitive interaction for human resources in this study was firms' responses to losing two or more employees to the same company in a 12-month period. This framework was consistent with competitive dynamics scholars' past definitions of an "attack" as an externally directed sequence of competitive actions clustered together in time (Ferrier, 2001; Smith, Ferrier, & Ndofo, 2001).

Responding to Competitors' Actions

Firms that decide to respond to a rival that hires its employees have a number of tactics from which to choose. Theoretical and empirical competitive dynamics research has distinguished between retaliatory and defensive actions following a perceived attack. In this domain, a retaliatory action involves threatening or harming a rival in reaction to its hiring actions. Such an action is explicitly directed at the firm that hired the former employees. Examples include filing a lawsuit, severing a business relationship, or raiding employees in turn (Karnani & Wernerfelt, 1985; Porter, 1980; Ramaswamy, Gatignon, & Reibstein, 1994). In contrast, a defensive action is an attempt, made after the loss of two or more employees to the same firm, to decrease the effectiveness of future hiring attempts by both that firm and others without directly, negatively impacting the hiring firm. Defen-

sive actions include raising pay, improving internal communications, and seeking outside mediation (Porter, 1980; Ramaswamy et al., 1994). Both types of actions are designed to prevent turnover; the essential distinction between attack and defense is that a retaliatory action threatens or harms a rival that has hired away a firm's employee, while a defensive action does not.

The defense/retaliation distinction described above is an effective framework for classifying lone actions following the loss of multiple employees to the same rival, but it does not fully describe how firms typically behave following a perceived attack. Firms that respond to rivals' actions can be expected to initiate not single actions, but sets of actions. Ferrier (2001) called a set of coordinated actions following a perceived attack a "competitive response." Examining scholarly literature outside of the organizational sciences yields a typology of different configurations of response sets. The study of head-to-head competition and responses to aggression crosses many academic disciplines. These include animal psychology (Blanchard & Blanchard, 1984), human psychology (Scott, 1975), economics (Fehr & Gächter, 2002), military strategy (Kuperaman, 2001), and many others. Some of these disciplines explicitly offer typologies classifying the response sets of entities (animals, humans, groups, organizations, or states) following competitors' attacks into three categories (Blanchard & Blanchard, 1984; Kuperaman, 2001), and others leave classification implicit (Bies, Tripp, & Kramer, 1997; Onuf, 1974). The three response categories are named by the composition of their action sets: "no response," "defensive response," and "defensive-retaliatory response."

The three named competitive responses represent categories or classes of a two-by-two typology summarizing response sets. The first dimension of the typology is defensive actions (absent/present), and the second dimension is retaliatory actions (absent/present). A firm that initiates neither defensive nor retaliatory actions following a competitor's perceived attack has exhibited, *de facto*, *no response*. A response set composed exclusively of defensive actions would be classified as a *defensive response*. A normative observation that emerges from the various fields concerned with responses to aggression is that retaliatory tactics initiated to harm an aggressor are very rarely used alone; rather, they are almost always combined with other tactics intended to avoid or reduce the potential harm of the aggressor's actions (Kuperaman, 2001; Onuf, 1974; Scott, 1975). Organizations' highest priority when faced with external harm is harm avoidance and self-preservation (Dutton & Jackson,

1987); of lesser importance is identifying and punishing the agent(s) responsible for harm (Weiner, 1995). Thus, a purely retaliatory response—a response set composed exclusively of retaliatory actions—is unlikely to be observed (Scott, 1975) and, as noted below, was not observed in this study. Such elimination of an empty cell of a typology is consistent with standard typology construction procedures (Bailey, 1994: 27). Thus, the third type of response set would be a combination of defensive and retaliatory actions. This will be termed a *defensive-retaliatory response*. These three response types are consistent with typologies of competitive responses presented in the business strategy literature (Karnani & Wernerfelt, 1985; Porter, 1980; Ramaswamy et al., 1994).

Degree of Threat and Uncertainty

It is expected that two key factors will determine how firms respond to the labor market actions of rival firms (Andersson & Pearson, 1999; Dutton & Jackson, 1987; Porter, 1980). A long line of research has suggested that the interpretations and actions of an organization's executives in large part drive the organization's responses to its external environment. The greater the threat posed by a rival's actions, the greater the likelihood an organization's key decision makers will notice, assess the consequences, and marshal the resources to react (Chen, Smith, & Grimm, 1992; Dutton & Jackson, 1987). In addition, the clarity of threatening actions shapes target firms' responses. Competitors' actions signal their motives, intentions, and goals (Milliken, 1987). When a firm faces the choice of doing nothing, taking defensive action, or taking defensive-retaliatory action, the difficulty of interpreting labor market actions will decrease the likelihood of a tit-for-tat retaliatory response and increase the likelihood of a purely defensive response (McGrath, Chen, & MacMillan, 1998; Porter, 1980). However, when the rival's actions provide a very clear signal of hostile intentions, defensive retaliation becomes more likely, and purely defensive action becomes less likely (Bendor, Kramer, & Stout, 1991; McGrath et al., 1998). Drawing upon both competitive dynamics and strategic human resources (HR) theory, I suggest in the following sections that attributes of an instigating firm and attributes of the human capital of the employees it has hired determine the degree of threat and uncertainty of its actions, thus affecting the response choice of the target firm.

Product-market overlap. According to economic, strategic, and organizational theory, the greater the similarity of the markets in which firms compete, the greater the rivalry between the firms

(Baum & Korn, 1996: 258; Chen, 1996). Firms compete for human resources in three different labor markets: skill/occupational, industry, and geographic markets (Milkovich & Newman, 1993). By definition, if one firm systematically hires the employees of another, they are competing in the same skill/occupational market. From the perspective of a target firm, a rival may or may not be competing in the same industry or geographic labor markets.

When firms compete for customers in the same industry or product-market, they frequently have the same technologies, processes, resource demands, and skill requirements (Chen, 1996; Teece, Pisano, & Shuen, 1997). A loss of multiple employees to a product-market competitor poses a significant threat to the targeted firm, increasing the likelihood of a defensive response. First, the loss of valuable human and social capital is the first part of the threat (Lepak & Snell, 1999). Second, because a product-market competitor is likely to need the same skills as a target firm, it will potentially hire a wide variety of employees from its target (Baum & Korn, 1996). Third, the product-market competitor will likely be able to profit from the skills and knowledge of the employees it hires away, at the expense of the target firm (Adler, 1999; Rao & Drazin, 2002). This increased threat from product-market competitors increases the likelihood the targeted firms will utilize purely defensive and defensive-retaliatory responses.

Hypothesis 1a. A firm losing two or more employees to the same rival is more likely to initiate a purely defensive response, as opposed to no response, the greater the product-market overlap between the hiring and target firms.

Hypothesis 1b. A firm losing two or more employees to the same rival is more likely to initiate a defensive-retaliatory response, as opposed to no response, the greater the product-market overlap between the hiring and target firms.

Geographic competitors. Competitors for talent located outside of a target firm's local labor market present a unique threat and are expected to affect target firms' propensities to respond to the loss of employees. Research on the role of migration in job turnover suggests the vast majority of voluntary job changes do not require workers to change where they live (Clark & Withers, 1999). Thus, when a firm's loss of employees to a single rival also results in the geographic relocation of these employees, the rival's actions will be more visible to decision makers than will be the loss of employees to local competitors. This heightened visibility will facili-

tate information processing, increase the target firm's awareness of the actions and the accuracy of its threat assessment, and thus increase the likelihood of a response (Smith et al., 2001). Second, owing to low or no additional commuting/relocation costs, the employees hired by local rivals have lower employer switching costs than they would if hired by nonlocal rivals (Dessendre & Moline, 1999). The low barriers to changing jobs decreases the effectiveness of purely defensive and defensive-retaliatory actions, thus decreasing decision makers' expectations about the effectiveness of response tactics (Chen & Miller, 1994). Losing employees to nonlocal rivals is thus likely to result in defensive and defensive-retaliatory responses.

Hypothesis 2a. A target firm is more likely to initiate a defensive response, as opposed to no response, to the loss of multiple employees to the same firm when the hiring firm is located outside the target firm's local labor market.

Hypothesis 2b. A target firm is more likely to initiate a defensive-retaliatory response, as opposed to no response, to the loss of multiple employees to the same firm when the hiring firm is located outside the target firm's local labor market.

The value of targeted human capital. Human resource strategy involves making choices regarding the management of people contingent on business strategy, competitive context, and the value of human capital. It is expected, therefore, that such characteristics as the value and transferability of the human capital of the employees hired by labor market competitors will affect how a firm responds to the hirings (Lepak & Snell, 1999). As firm performance is at least partially a function of the value of its human and social capital (Hitt, Bierman, Shimizu, & Kochhar, 2001), organizations are expected to invest more in responding to human resource threats as the value of the human resources increases.

The above suggests that the greater the value-creating capability of the employees targeted by a labor market rival, the greater the threat to the target firm's value-creating capabilities. Previous studies of the dynamics of competitive interaction have shown that the more a competitor's move threatened the revenue stream of an affected firm, the greater the likelihood the firm would respond to the competitor's action (Chen et al., 1992). Additional theory and research have suggested that the more a rival's actions threaten a target's value-creating capabilities, the more aggressive its response. The purpose of retaliation is to both stop a

current perceived attack and deter future attacks from the same or other firms. The greater the aggressiveness of the response, the less likely the same or other firms are to systematically hire the target firm's employees in the future (Karnani & Wernerfelt, 1985). Previous research has shown that the greater the strategic importance of a market threatened by new business or new product entry, the more aggressive is the response of established firms (Ramaswamy et al., 1994). Thus, one should expect that the greater the value of the human capital threatened by the hiring actions of a rival, the greater the likelihood targeted firms will respond with purely defensive and defensive-retaliatory tactics.

Hypothesis 3a. A firm losing two or more employees to the same firm is more likely to initiate a defensive response, as opposed to no response, the greater the value of the targeted human capital.

Hypothesis 3b. A firm losing two or more employees to the same firm is more likely to initiate a defensive-retaliatory response, as opposed to no response, the greater the value of the targeted human capital.

Moderated Effects

Differences in the likelihood of defensive and defensive-retaliatory responses. Although organizational decision makers may estimate the general level of threat rivals' actions represent, two types of uncertainty are associated with deciphering and responding to competitive actions. First, the nature, severity, and timing of the impact rivals' actions will have are uncertain (Porter, 1980; Smith et al., 2001). These three unknowns comprise "effect uncertainty" (Milliken, 1987). Second, decision makers face "response uncertainty," or inability to estimate the consequences of various response options (Milliken, 1987). The greater the effect and response uncertainty are, the more likely firms will be to take purely defensive actions, rather than defensive-retaliatory actions (Andersson & Pearson, 1999; Bendor et al., 1991; McGrath et al., 1998).

Because labor market actions are ambiguous, it is expected this phenomenon will be observed in head-to-head competition for human resources. Effect uncertainty will be high as human assets are a socially complex, ambiguous resource: the link between the resource and value creation is not well understood (Coff, 1997: 327). At the time of hiring, an individual's productive capacity is unknown. Even afterward, the employee's productive capac-

ity is slowly and only partially revealed via monitoring, measurement, and observation (Coff, 1997; Spence, 1973). Furthermore, when a rival takes a labor market action such as hiring a firm's employees, it is unclear whether the action was an intentional plan to raid talent (Finlay & Coverdill, 2002) or the unintentional result of broad recruiting (Rynes & Barber, 1990). Assuming intentional hostility where none exists (a type I error) and retaliating risk the creation of a vicious and unnecessary feud (Bendor et al., 1991; McGrath et al., 1998). Thus, in the face of uncertainty about the full consequences of a loss of employees and about the consequences of response options, victim firms are expected to be more likely to take defensive actions than defensive-retaliatory actions.

Hypothesis 4a. Following the loss of multiple employees to the same rival, the strength of the relationship between product-market overlap and defensive responses is stronger than the relationship between product-market overlap and defensive-retaliatory responses.

Hypothesis 4b. Following the loss of multiple employees to the same rival, the strength of the relationship between nonlocal labor market status and defensive responses is stronger than the relationship between nonlocal labor market status and defensive-retaliatory responses.

Hypothesis 4c. Following the loss of multiple employees to the same rival, the strength of the relationship between the value of human capital and defensive responses is stronger than the relationship between the value of human capital and defensive-retaliatory responses.

The transferability of targeted human capital.

Human capital theory suggests that an individual's or a group's human capital can be decomposed into that which is valuable to a specific employer and that which has value in the broader labor market. In practice, skill sets vary on a continuum ranging from usefulness to a small number of firms, a large number of firms, or all firms. Stevens (1994) dubbed this continuum of usefulness "transferability," and Trevor (2001) called it "movement capital."

While in an organization's employ, workers develop both transferable and firm-specific skills. The transferability of the human capital of hired employees may moderate the likelihood that firms that have lost two or more employees to a single rival will respond with purely defensive or with defensive-retaliatory tactics. First, if the labor market rival has been successful in hiring employees with valuable, transferable skills, the likelihood is high

that this or another rival will have a need for and hire similar employees in the future (Coff, 1999). Second, information asymmetries give employing firms better knowledge about job incumbents than labor market competitors have. However, as the transferability of skills increases, an outside firm can better judge their quality, making it easier for it to identify and hire employees with higher marginal productivities and thus increasing the risk of future losses of highly productive, value-creating employees (Coff, 1999).

Extant human resource theory suggests that firms use social structures such as internal labor markets, legal agreements, and interorganizational relationships to protect valuable human capital from labor market competition. However, as transferability increases, human capital is expected to be managed through market-based practices such as retaliating against competitors (Lepak & Snell, 1999). Within the broader competitive interaction literature, authors have noted that product standardization decreases the effectiveness of noneconomic competitive responses to rivals' actions (such as advertising to maintain brand loyalty), forcing affected firms to retaliate to protect and regain competitive positions (Karnani & Wernerfelt, 1985; Porter, 1980: 343; Ramaswamy et al., 1994). These observations suggest that as transferability and value jointly increase, firms are likely to use externally directed actions such as defensive retaliation to punish hiring firms and signal other potential labor market competitors that they will defend against future losses (Chen & MacMillan, 1992; Lepak & Snell, 1999).

Hypothesis 5a. The positive relationship between the value of targeted human capital and the likelihood of a firm's defensive response to the loss of employees to another firm is stronger the higher the transferability of the human capital developed by employees while in the employ of the target firm.

Hypothesis 5b. The positive relationship between the value of targeted human capital and the likelihood of a defensive-retaliatory response to the loss of employees to another firm is stronger the higher the transferability of the human capital developed by employees while in the employ of the target firm.

Differences in the strength of defensive and defensive-retaliatory responses. Contrary to the expectations for the "main effects," my expectation for the interaction of the value and transferability of human capital was that it would be stronger for defensive-retaliatory than for purely defensive responses. Social complexity and ambiguity make

the true value of human assets difficult to estimate. However, as the transferability of human capital increases, both an employer and rival firms can better estimate its value (Coff, 1997; Trevor, 2001). Transferability reduces both effect and response uncertainty. First, greater transferability provides a victim firm insight into the consequences of a hiring firm's actions. The greater the accuracy with which rivals' actions are identified as hostile and consequential, the greater the likelihood the victim firm will retaliate (Bies et al., 1997; Luckenbill, 1977). Secondly, as the transferability and value of the skills of the targeted employees simultaneously increase, the more likely it becomes that the actions of the hiring firm will be perceived as benefiting it and thus will be viewed as intentional (Bendor et al., 1991). Studies of individuals involved in hostilities suggest that when an instigating act is perceived as intentional, retaliation becomes much more likely (Felson, 1982). At the firm level of analysis, signals of the intentionality of rivals' actions increases the likelihood of aggressive responses (Chen & Miller, 1994; Heil & Walters, 1993). Transferability, when interacting with the value of targeted human capital, reduces the uncertainties and risks normally associated with defensive-retaliatory action, making it the more likely response to rivals' actions.

Hypothesis 6. Following a firm's loss of multiple employees to the same rival, the interaction of the value and transferability of the targeted human capital is a stronger predictor of defensive-retaliatory responses than of defensive responses.

METHODS

Data

The sample frame for this study consisted of the population of companies that met four criteria: First, they were headquartered in the United States. Second, their primary line of business was software, leading to their categorization into SIC code 7371, 7372, or 7373. I chose to examine one industry to reduce interindustry variance. Third, these were parent companies rather than divisions of larger firms. Business units within larger firms would have had resources and structures affecting response propensities outside the domain of the model. Fourth, the selected companies employed 50 to 5,000 employees. Reports in the business press suggest that very small firms are rarely the targets of rivals' hiring actions. As for very large firms, (1) they might not notice the loss of a few employees and (2) their response propensities would be driven by the subunit losing the employ-

ees. Thus, I excluded both very small and very large companies.

All companies were identified in the OneSource CorpTech Corporate Profiles. Professionals in the business intelligence community consider this database the premier source of information on high-tech companies (Kassel, 1999). A total of 1,857 companies met the screening criteria. Ten randomly selected companies were used for a pilot study, and the data collected were not included in the subsequent analyses. Telephone interviewers were able to contact 905 (49%) of the target company informants in the 1,847 companies remaining in the sampling frame. Of the 905 contacted company informants, 661 agreed to participate in the study, a number yielding a response rate of 73 percent.

Primary data were collected from an HR or operational executive at each firm by a professional survey group that used computer-assisted telephone interviewing (CATI) technology. Once the telephone surveyors had identified a firm's vice president of HR or other executive in charge of personnel issues, they called that person up to 20 different times, randomly scheduled by the CATI system. Eighty-two percent of the informants were either top executives (CEO, owner, or president) or top HR executives. The remaining 18 percent of informants included HR managers, CFOs, and controllers. Informants' responses were "data-entered" as they were given. The average time to administer the survey was just under 25 minutes.

To participate in the study, a company had to have lost two or more employees to one other company in a single 12-month period in the three years prior to contact (all the contacts were made between February and May 2002). I chose three years rather than a shorter period because pilot study respondents mentioned that the economic conditions of 2000–01 brought a decrease in hiring activity. On average, each participating firm had lost two or more employees to a single rival firm 14 months (s.d. = 9.4) prior to the study; these losses were well within a time frame that knowledgeable informants could be expected to recall with a good degree of accuracy (Miller, Cardinal, & Glick, 1997).

Three screening questions were used to distinguish companies that had lost multiple employees to the same competitor from those that had not. Appendix A gives the exact wording of the three questions. I based the threshold of two employees on (1) the definition of a perceived attack given above (a sequence of actions clustered together in time [Ferrier, 2001; Smith et al., 2001]) and (2) the distinction, also made above, between the hiring of one employee and more than one employee from a single company (Finlay & Coverdill, 2002; Gardner,

2002). The 12-month parameter was derived from extensive fieldwork with companies that hire multiple employees from the same firm, companies that have lost multiple employees to the same firm, and feedback from pilot study participants. Finally, surveyors asked informants to confirm that people in their company generally believed that the firm that hired the employees had purposefully recruited them. Of the 661 participating companies, 135 (21.2%) met the three criteria outlined above. If a firm had not suffered such a loss of employees, no further questions were asked, and the survey was terminated. Informants were only asked about one set of interactions with one labor market rival. Targeted companies were located in 33 different states; only 18 (13.3%) were located in what is typically considered Silicon Valley.

Using multivariate analysis of variance (MANOVA), I compared companies whose key informants could or could not be contacted, and companies whose informants did or did not agree to participate in the study. Four archival variables in the CorpTech database allowed this comparison: number of employees, firm age, 2001 annual sales, and sales per employee. The results suggested that the 905 companies successfully contacted were not different from the 942 companies that the surveyors failed to contact ($p < .26$). Companies whose informants agreed to participate were very slightly different from companies not agreeing to participate ($p < .05$, $\eta^2 = .01$). Exploratory ANOVAs suggested participating companies were younger and had fewer employees, lower sales, and lower sales-per-employee ratios. The empirical model controlled for these small differences.

It's also important to note that another MANOVA suggested the 135 participating companies differed from the firms that agreed to participate in the study but had not lost multiple employees to the same rival. Although the overall differences were small ($p < .001$; $\eta^2 = .07$), victim firms were larger and older, and they had greater sales revenues and more sales per employee. These findings demonstrate that victim firms differ from nonvictim firms, but there is no way to compare the attributes of the victim firms in this sample with the population of victim firms in the software industry.

Measures

Dependent variable. Accurately classifying each firm's response set into one of the three categories required measuring the number and type of discrete responses to the loss of multiple employees to a single rival and then applying the typology classification rules outlined above in my literature

review. Informants were asked to answer a series of 12 yes/no questions about their firms' actions in direct response to the loss of employees. Drawing on press reports and interviews with HR executives, consultants, and headhunters, previous research (Gardner, 2002) generated a list of 16 possible responses to the loss of multiple employees to a single rival. Nine of the 12 items used in this study were derived from this list, and 1 item, which concerns firms requiring remaining employees to sign "noncompete agreements," emerged from the pilot study.¹ The remaining 2 items asked respondents (1) if their firms had taken any additional actions that could be classified as defensive and (2) if their firms had taken any additional actions that could be classified as retaliatory. Appendix A lists the 12 response items along with the other items used in the study.

Prior to conducting the study, I used definitions of defensive and retaliatory responses (these are given above) to losing employees to a labor market rival to classify each of the ten specific reactions as either defensive or retaliatory. To validate this subjective classification, I used a statistically more rigorous variation of the ANOVA approach to content validation (Hinkin & Tracey, 1999). Appendix B describes this analysis and methodology.

Forty-one company informants (30.4%) answered no to all 12 items, suggesting their companies made no response to their rivals' hiring actions. Sixty-two firms (45.9%) reported one or more defensive actions only (range = 1–4; $\bar{x} = 1.44$ per company). I classified these companies as initiating defensive responses. Thirty-two companies (23.7%) reported some type of retaliatory action (range = 1–4; $\bar{x} = 1.41$ per company). All 32 retaliating companies, as expected, had also taken some sort of defensive action (range = 1–6; $\bar{x} = 2.16$ per company). These companies' responses were classified as defensive-retaliatory.

Local labor market. No consensus exists on how a firm's local labor market is best measured. Some scholars define local boundaries by firms' workers' commuting patterns, specifically, by measuring the maximum time a typical employee is willing to spend commuting to work (van den Berg & Gortner, 1997). Federal surveys suggest the average worker

¹Five of the seven items found in Gardner (2002) but not included in the study were subsumed under other actions. One of the seven, relocating the facility, was considered unlikely. The final item, conducting focus groups, was not included as it was considered information gathering prior to taking action rather than a discrete action.

commutes 22.3 minutes (s.d. = 20.4) to work (Federal Highway Administration, 1995). Normal distribution theory would suggest 84 percent of a typical firm's employees live approximately 45 minutes from their place of employment. If most employees commute up to 45 minutes to work, a firm's local labor market competitors must include employers within this commuting boundary but also the set of firms located within 45 minutes of this perimeter. Thus, nonlocal labor market competitors were defined as the set of firms more than 90 minutes away by car from the focal firm.

Product-market overlap. There are a number of ways to identify a focal firm's product-market competitors. These include using industry as an observable proxy or clustering industry members with similar attributes into strategic groups (Chen, 1996). Both of these methods ignore the markets in which firms actually compete. A product-market is best defined by the context in which a firm offers its products or services for sale. Thus, in this study I defined product-market competitors as firms selling similar goods and services serving similar functions to similar users (Baum & Korn, 1996; Chen, 1996).

Three questions were used to assess the degree of product-market overlap between a target and a hiring firm (see Appendix A). I treated these questions as formative indicators of an index and averaged them to create the observed variable (Diamantopoulos & Winklhofer, 2001). Since this variable was used in one of the interaction terms, I centered the variable by subtracting the mean from each of its elements (Aiken & West, 1991).

Value of human capital. The utility theory literature has been systematizing the measurement of human capital value for three generations. A key component of utility formulae is "SDy," the dollar value to an employing organization of a one-standard-deviation improvement in the job performance criterion of an individual in a certain job (Boudreau, 1992: 651). One common method of measuring SDy is to ask company experts to estimate the value of job performance across two points along a hypothetical performance distribution. The average of the two assessments is the estimate of SDy (Schmidt, Hunter, McKenzie, & Muldrow, 1979). I used a similar method to estimate the value of the human capital of employees hired away from focal firms in this study. Informants were asked to estimate the impact on firm financial performance of two levels of improvement in the performance of a person in the job from which the employees were hired: (1) from low to average

and (2) from average to high. The two items were averaged and centered.

Transferability of human capital. Using Stevens's (1994) and Trevor's (2001) definitions of the transferability of human capital and movement capital, I constructed a two-item measure of the transferability of the human capital developed by workers hired away from a target firm. Using a scale ranging from 1, "none," to 5, "a great deal," informants indicated how much of the knowledge and skills that employees learned in their jobs at the target company could be used at similar jobs in the high-tech industry. The second question, using a five-point scale ranging from "strongly disagree" to "strongly agree," asked informants whether the skills learned on their jobs increased their ability to move from one job to another in the high-tech industry. The items were averaged and centered.

Control variables. Six control variables expected to affect competitive response were included in the final model. The total number of employees hired by a specific firm in the 12 months after the first employee was hired frequently (in 59.3 percent of the cases) exceeded two and was included as a control. Business performance prior to the hiring actions was included as a control. Given shortcomings of the CorpTech database, subjective assessment of prior business success was deemed a valid and reliable means of measurement (Brush & Vanderwerf, 1992). Drawing from previously used measures of subjective performance, I asked respondents to rate their prehiring event performance in net profit after taxes, revenue growth, and market share growth on a five-point Likert-type scale ranging from "much worse than competitors" to "much better than competitors" (Dess & Robinson, 1984; Ramanujam, Venkatraman, & Camillus, 1986).

Noncompete agreements limit the employment options of employees after they leave the contracting employer. These agreements frequently specify competing companies for whom an employee may not work, the length of time the contract is in effect, and geographic locations where the employee may not be employed (Adler, 1999; Bland & Harkavy, 2000). The more a rival's hiring actions violate these provisions, the greater the degree of violation. Appendix A gives the items used here to measure this variable.

Additional control variables included the size of a hiring firm (number of employees); the size of a target firm (number of employees); and the age of a target firm at the time of the hiring events.

RESULTS

Table 1 gives the correlations among all the variables, and Table 2 gives the aggregate and response-specific means and standard deviations for all the variables. Interitem reliability estimates are presented for the nonindex and noncategorical variables on the diagonal of the correlation matrix in Table 1.

Given the three-category dependent variable, hierarchical multinomial logistic regression was the best analytic technique for hypothesis testing (Powers & Xie, 2000). Multinomial models simultaneously estimate coefficients for each parameter for each category relative to two other categories. Typically, one of the three categories is chosen as a referent, and the cases are modeled on the basis of their probability of being classified into the other two categories rather than the referent category. For this study, "no response" was the referent category. This model was consistent with the hypotheses tested and allowed analysis of the variables affecting both actions, relative to no action, without implying that variables that affect one action necessarily affect the other. The two reported equations provide estimates of two distinct intercept terms and distinct logistic regression coefficients for each of the independent variables for each equation (Jaccard, 2001). The sets of coefficients from the two panels were compared to test Hypotheses 4a, 4b, 4c, and 6.

The results of the hierarchical multinomial logis-

tic regression analysis are reported in Table 3. Model 1 includes the control variables only. Model 2 includes the control variables and the four lower-order terms. Model 3 adds the interaction of the value and the transferability of human capital to the control and lower-order variables. The chi-square statistics for the three models consistently indicate strong model significance ($p < .001$). For models 2 and 3, I used a chi-square difference test to assess the statistical significance of the improvement of model fit due to the inclusion of additional variables (Jaccard, 2001). Additionally, the pseudo- R^2 s suggest a significant proportion of the variation in response propensities is explained in the three models.

Model 1 of Table 3 shows that the six control variables explain 29 percent of the variance in target firms' response choices. The greater the number of employees hired by a rival firm, the greater the likelihood of both purely defensive ($p < .01$) and defensive-retaliatory responses ($p < .001$). The greater the size of the target firm, the lower the probability it will take defensive action ($p < .01$). Increased size is also associated with a decreased likelihood of defensive retaliation ($p < .10$). Age of the target firm is a marginal predictor of the likelihood of a defensive response, but it is not associated with the likelihood of a defensive-retaliatory response. Older firms are more likely to initiate a defensive response than younger firms ($p < .09$). The size of the hiring firm is not a significant pre-

TABLE 1
Correlations among All Variables^a

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Defensive response ^b												
2. Defensive-retaliatory response ^c	n.a. ^e											
3. Number of hired employees ^d	.26**	.44**										
4. Size of target firm ^d	-.21*	.02	.17*									
5. Size of hiring firm ^d	.07	-.02	-.04	-.03								
6. Age of target firm ^d	.09	.11	-.04	.20*	.12							
7. Prior business success	-.23*	.14	-.10	.23**	.00	.05						
8. Violation of noncompete agreement	.13	.32**	.09	.06	.05	-.03	.14					
9. Non-labor market competitor	.18	.17	.00	.12	.17*	.17*	.14	.05				
10. Product-market overlap	.03	.16	.05	.19*	-.11	-.01	.09	.00	-.29**			
11. Transferability of human capital	.11	.25*	.02	-.05	-.06	.04	-.02	.14	.13	.13	.65	
12. Value of human capital	.22*	.15	-.12	-.18*	-.03	-.03	.00	.02	-.08	-.01	-.03	.75

^a Unless otherwise noted, $n = 135$.

^b $n = 103$; 62 defensive cases (coded 1) and 41 no response cases (coded as 0).

^c $n = 73$ for this variable; 32 defensive-retaliatory cases (coded 1) and 41 no-response cases (coded 0).

^d Correlations were calculated with the natural logarithm of the variable.

^e The vectors only match on cases coded "no response"; thus, a correlation could not be calculated.

* $p < .05$

** $p < .01$

TABLE 2
Descriptive Statistics for All Variables across All Response Options

Variables	Aggregate Cases ^a		No-Response Cases ^b		Defensive Cases ^c		Defensive-Retaliatory Cases ^d	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
1. Defensive actions	1.17	1.22	0.00	0.00	1.44	0.72	2.16	1.59
2. Retaliatory actions	0.33	0.70	0.00	0.00	0.00	0.00	1.41	0.76
3. Number of hired employees ^e	4.17	3.76	2.88	1.72	4.27	3.68	5.63	5.14
4. Size of target firm ^e	420.64	789.68	498.39	962.27	359.60	778.05	439.31	542.00
5. Age of target firm ^e	14.54	11.18	13.41	11.53	15.23	0.23	14.66	8.60
6. Size of hiring firm ^e	8,487.20	22,688.80	9,186.80	26,529.00	8,278.80	17,294.30	7,994.40	26,973.10
7. Violation of Noncompete agreement	1.20	1.05	0.92	0.88	1.18	1.07	1.59	1.10
8. Prior business success	3.54	0.77	3.65	0.66	3.30	0.78	3.86	0.73
9. Nonlabor market competitor	0.16	0.37	0.07	0.26	0.21	0.41	0.19	0.40
10. Product-market overlap	1.57	1.04	1.46	1.04	1.53	1.04	1.78	1.05
11. Transferability of human capital	3.95	0.76	3.78	0.70	3.95	0.78	4.16	0.76
12. Value of human capital	3.15	0.67	2.96	0.67	3.26	0.65	3.17	0.67

^a $n = 135$.

^b $n = 41$.

^c $n = 62$.

^d $n = 32$.

^e The actual mean is reported here. The natural logarithm of the variable was used in correlations and in the regression equations.

dictor of either purely defensive or defensive-retaliatory responses. The degree of violation of non-compete agreements is a marginal predictor of defensive responses and a strong predictor of defensive-retaliatory responses. The greater the degree of violation, the greater the likelihood of a defensive response ($p < .06$) and the greater the likelihood of a defensive-retaliatory response ($p < .01$). Finally, prior business success is a marginal predictor of defensive responses but is not associated with defensive-retaliatory responses. The greater the past business success, the lower the likelihood of a defensive response ($p < .07$).

As shown in model 2, the addition of the four lower-order terms significantly improves the fit of the model ($\Delta \text{pseudo-}R^2 = .09$, $p < .05$). Contrary to expectations, the degree of product-market overlap between the hiring and target firms is not associated with an increased likelihood of a purely defensive or defensive-retaliatory response from the target firm, providing no support for Hypotheses 1a and 1b. As expected, the nonlocal labor market status of the hiring firm is a significant, positive predictor ($p < .05$) of the likelihood of a defensive response, supporting Hypothesis 2a. The coefficient for labor market status

is not a significant predictor of defensive-retaliatory response in model 2, which includes the lower-order terms only, but labor market status rises to marginal significance ($p < .09$) in the more fully specified model 3.² The coefficient is positive, supporting Hypothesis 2b.

Hypotheses 3a and 3b predict that the greater the value of the human capital of the employees hired out of a target firm, the greater the likelihood the target firm will take purely defensive and defensive-retaliatory actions. The coefficient for human capital value is, as expected, positive and significant in the defensive response panel of model 2 ($p < .05$) and in the fully specified model 3 ($p < .01$), supporting Hypoth-

²It is likely that the coefficient for labor market status was not significant in model 2 because of a specification error resulting from omission of the significant interaction term included in model 3 (Freund & Wilson, 1988: 250). Since the variables representing the four lower-order terms were centered, collinearity between the lower-order and interaction terms was minimized, allowing their interpretation in the fully specified model (Aiken & West, 1991).

TABLE 3
Results of Hierarchical Multinomial Logistic Regression Analyses^a

Variables	Model 1		Model 2		Model 3	
Defensive action only						
Intercept	1.59	(1.90)	2.03	(2.15)	2.23	(2.19)
Number of hired employees ^b	1.77**	(0.60)	2.24***	(0.66)	2.31***	(0.67)
Size of target firm ^b	0.76**	(0.29)	−0.84**	(0.33)	−0.85**	(0.33)
Age of target firm ^b	0.53 [†]	(0.32)	0.54	(0.36)	0.61 [†]	(0.36)
Size of hiring firm ^b	0.11	(0.10)	0.09	(0.10)	0.10	(0.10)
Violation of noncompete agreement	0.41 [†]	(0.24)	0.47 [†]	(0.26)	0.51 [†]	(0.27)
Prior business success	−0.43	(0.32)	−0.60 [†]	(0.37)	−0.72	(0.40)
Nonlabor market competitor			1.80*	(0.86)	2.07*	(0.89)
Product-market overlap			0.21	(0.26)	0.20	(0.26)
Transferability of human capital			0.46	(0.34)	0.53	(0.35)
Value of human capital			0.94*	(0.41)	1.20**	(0.46)
Value of human capital × transferability of human capital					0.73	(0.60)
Defensive-retaliatory action						
Intercept	−4.30*	(2.22)	−3.74	(2.43)	−3.24	(2.53)
Number of hired employees ^b	2.43***	(0.64)	2.83***	(0.70)	2.73***	(0.71)
Size of target firm ^b	−0.50	(0.31)	−0.61 [†]	(0.36)	−0.60 [†]	(0.36)
Age of target firm ^b	0.56	(0.40)	0.52	(0.43)	0.53	(0.44)
Size of hiring firm ^b	−0.01	(0.11)	0.00	(0.12)	−0.01	(0.12)
Violation of noncompete agreement	0.65*	(0.27)	0.74*	(0.30)	0.86**	(0.31)
Prior business success	0.51	(0.39)	0.35	(0.42)	0.18	(0.45)
Nonlabor market competitor			1.29	(0.96)	1.72 [†]	(1.01)
Product-market overlap			0.46	(0.31)	0.48	(0.32)
Transferability of human capital			0.74 [†]	(0.41)	0.86*	(0.43)
Value of human capital			0.75 [†]	(0.46)	1.03*	(0.52)
Value of human capital × transferability of human capital					1.73**	(0.69)
Model χ^2	46.08***		64.02***		70.91***	
Model <i>df</i>	12		20		22	
$\Delta\chi^2$			17.94*		6.87*	
Δdf			8		2	
Cox and Snell pseudo- <i>R</i> ²	.29		.38		.41	
Δ pseudo- <i>R</i> ²			.09*		.03*	

^a Values in parentheses are standard errors.

^b Logarithm.

⁺ $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

All two-tailed tests.

esis 3a. The coefficient for the value of human capital is a marginally significant predictor of defensive-retaliatory responses in model 2, which includes the lower-order terms only ($p < .10$). However, in the more fully specified model 3, which includes the significant interaction term for the value and transferability of the hired human capital (reviewed below), the coefficient is, as expected, positive and significant ($p < .05$), supporting Hypothesis 3b.³

³ The coefficient for human capital value, like that for labor market status, was likely insignificant owing to omission of the significant interaction term included in model 3.

Hypotheses 5a and 5b predict that the greater the transferability of the hired human capital, the stronger the positive relationship between the value of the hired human capital and the likelihood of purely defensive and defensive-retaliatory responses. This proposition was tested in model 3 by the inclusion of the interaction of the transferability and the value of human capital. The addition of this interaction term improved model fit (Δ pseudo- $R^2 = .03$; $p < .05$). However, the coefficient was not significant in the top panel, suggesting the interaction did not improve the prediction of defensive responses, providing no support for Hypothesis 5a. The coefficient was signif-

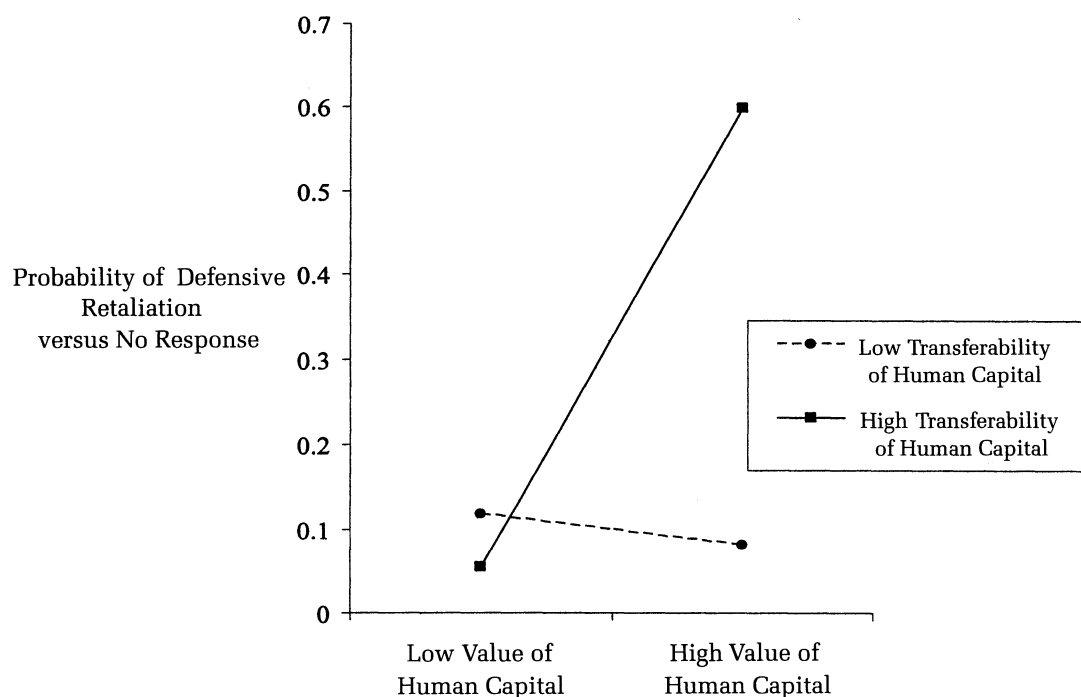
icant in the lower panel, suggesting the interaction term improved the explanation of defensive-retaliatory responses. To gain further insight into this effect, I graphically plotted the interaction of transferability and value of human capital in predicting the probability of retaliating following the hiring of multiple employees by the same firm. This graph involved calculating four separate point estimates of the probability of a retaliatory response using the means of the three noninteracting variables and the four combinations of high and low transferability and human capital value one-standard-deviation above and below the mean. Point estimates were converted from log-odds into actual probabilities (Jaccard, 2001).

As can be seen in Figure 1, the probability of a firm making a defensive-retaliatory response is low following the loss of both high- and low-value human capital when the transferability of the developed human capital is low (11.8 and 8.1 percent, respectively). When the hired human capital is highly transferable and the value of the human capital is low, the likelihood of the target firm responding with defensive-retaliation remains low (5.4%). However, when the human capital value is high and transferability is high, there appears to be a dramatic increase in the likelihood a target firm will respond with defensive-retaliatory tactics (59.9%). This pattern of findings suggests transfer-

ability moderates the positive relationship between the value of human capital and the probability of responding to the hiring actions of a labor market rival with defensive-retaliatory actions, supporting Hypothesis 5b.

Hypotheses 4a, 4b, and 4c predict that the relationship between product-market overlap, labor market status, and the value of human capital with the two response options will be stronger for purely defensive responses than for defensive-retaliatory responses. I used a *t*-test to verify the difference between the matching coefficients in the defensive and defensive-retaliatory panels of the multinomial logistic regression equations (Gulati & Singh, 1998: 802–803). As product-market overlap was not a significant predictor of either defensive or defensive-retaliatory responses, Hypothesis 4a could not be tested and thus was not supported. The *t*-test of the difference between the two coefficients for non-labor market competitor yielded a significant difference; the coefficient in the defensive panel ($b = 2.07$, *s.e.* = 0.89) is significantly larger than the coefficient in the defensive-retaliatory panel ($b = 1.72$, *s.e.* = 1.01; $p < .05$). A *t*-test of the difference between the two coefficients for value of human capital showed that the coefficient in the defensive panel ($b = 1.20$, *s.e.* = 0.46) was significantly larger than the coefficient in the defensive-retaliatory panel ($b = 1.03$, *s.e.* = 0.52; $p < .05$). These find-

FIGURE 1
Interaction between the Value and Transferability of Human Capital Predicting the Probability of Defensive Retaliation following the Loss of Employees to a Rival



ings support the assertions of Hypotheses 4b and 4c that the two variables are stronger predictors of purely defensive actions than of defensive-retaliatory actions.

Hypothesis 6 predicts that the interaction of the value and transferability of human capital will be stronger for defensive-retaliatory responses than for purely defensive responses. Although the interaction term was not significant for defensive responses, it is still possible to compare the two estimated coefficients. Per the *t*-test, the difference between the coefficient for the interaction term in the defensive panel ($b = 0.73$, *s.e.* = 0.60) and the coefficient for the interaction term in the defensive-retaliatory panel is significant ($b = 1.73$, *s.e.* = 0.69, $p < .05$). This finding suggests the interaction of value and transferability is a stronger predictor of defensive-retaliatory responses than of purely defensive responses, supporting Hypothesis 6.

DISCUSSION

The study of competitive dynamics concerns firms' actions to gain and/or protect competitive advantage, affected firms' identification of and responses to those actions, and the performance outcomes of such dynamic interactions. Prior to this study, the gain and loss of competitive advantage has always been measured in terms of gains and losses in customers and revenues. This study is the first to suggest that human capital may be an important basis for interfirm competitive dynamics.

The primary purpose of this study was to extend both strategic human resource management and competitive dynamics theories by developing and testing a theory of competition for human resources. Specifically, I sought to develop and test a theory of the drivers of human capital competition. Drawing on competitive dynamics theory, I proposed that the degree of threat posed by competitors' actions, along with the degree of uncertainty associated with these actions' responses, predicts how target firms respond to a loss of multiple employees to identifiable rivals. The results of the study were broadly consistent with the theory.

The degree of threat a competitor's action poses was "operationalized" in terms of the attributes of the competitor and threat to the targeted human capital. Unexpectedly, losing multiple employees to a product-market competitor was not associated with either purely defensive or defensive-retaliatory responses. As hypothesized, hiring actions initiated by nonlocal labor market competitors were positively associated with the likelihood of a defensive response. Hiring actions initiated by nonlocal labor market competitors were marginally, pos-

itively associated with the likelihood of a defensive-retaliatory response.

As expected, the value and transferability of human capital jointly predicted the likelihood of a defensive-retaliatory response. The greater the value of the human capital of the hired employees, the greater were the likelihoods that target firms responded with defensive responses, and with defensive-retaliatory responses. Furthermore, the greater the transferability of the targeted human capital, the stronger the relationship between human capital value and the probability of defensive retaliation.

This study suggests that its key variables are stronger predictors of purely defensive responses than of defensive-retaliatory responses when firms face uncertainty regarding the consequences and intentions of rivals' actions. However, the study also demonstrates that when the actions of a rival are likely to be perceived as highly damaging and as clearly in the self-interest of the instigating firm, the uncertainties that restrain defensive retaliation are reduced, resulting in punitive actions directed toward rivals.

This study contributes to a broader theory of strategic human resource management in three important ways. First, a number of studies strongly support the supposition that human resource actions generate profits and, ultimately, competitive advantage (Delery & Shaw, 2001). Rao and Drazin's (2002) work, building on a body of research examining the impact of recruiting from competitors, suggests these tactics provide tangible advantages to hiring firms. This study suggests that firms' attempts to gain competitive advantage do not constitute a linear process of action followed by competitive gain. Companies attempting to gain competitive advantage through people face the same hypercompetitive market forces faced by firms seeking to gain advantage in the marketplace for customers, revenues, and tangible resources (D'Aveni, 1994). Although there are systematic differences in human capital competition—namely, the greater uncertainty associated with the intentions and consequences of rivals' actions—the process of action and reaction remains the same.

The second contribution of this study is its empirical support for the emerging theoretical literature on human resource architecture. Lepak and Snell's (1999) work suggests firms manage different employee groups differently, depending on the value and uniqueness of their human capital. This study supports this work by demonstrating that firms respond more aggressively the greater the value and transferability of the human capital they have lost. In keeping with Lepak and Snell's (1999)

theory, these results suggest that firms will not strictly rely on various social structures to protect such employees from labor market competition but will instead rely on external market mechanisms such as the retaliatory actions of this study.

Finally, the results of this study are consistent with and build upon the unfolding model of employee turnover. The unfolding model suggests jarring events, the review of predetermined turnover scripts, and the initiation of decision processes proceed in five orderly paths prior to individuals quitting organizations (Lee & Maurer, 1997). One of these paths, "path 1 turnover," charts the exit process that follows employees' receipt of unsolicited job offers. In keeping with previous research in this stream, this study suggests firms will adjust their HR practices following the loss or threatened loss of employees to increase their attractiveness as employers (Lee & Maurer, 1997). Building on this work, the present study suggests that firms may attempt to decrease the likelihood employees will receive outside job offers by directly influencing the behavior of labor market rivals. This study also suggests that following the loss of employees to a rival, firms may require remaining employees to sign noncompete agreements limiting their labor market opportunities. These agreements may change employees' scripts or action plans, following the receipt of unsolicited job offers from forbidden labor market rivals. Future research might explore the effectiveness of these tactics and apply the unfolding model to explore their underlying mechanisms.

Bringing competition for human resources into the competitive interaction fold makes a significant contribution to the broader literature on head-to-head competition. First, by shifting the context from price and customer competition to competition for human resources, this study supports the well-established notion that degree of threat plays an important role in how firms respond to the competitive actions of their rivals (Chen et al., 1992). Second, modeling interfirm competition for human resources opens the door for further theorizing and empirical modeling of how firms compete head-to-head for invisible and intangible resources, as opposed to revenues and market share; the bedrock of the competitive interaction literature has been the latter (Smith et al., 2001). Resource-based theories suggest intangible assets such as reputation, organizational knowledge, and capabilities develop through repeated actions and routines (Nanda, 1996). As firms purposefully or serendipitously take actions that lead to the development of these routines and assets, they may provide signals of their activities that competing firms can observe,

process, and answer. By linking effect and response uncertainty to models of competitive interaction, this paper provides a rough foundation for theoretical work linking the resource-based and competitive interaction theories.

Limitations

As a new addition to the competitive dynamics research stream, this study has limitations that must be acknowledged here and overcome by future contributors to this area. First, the present study used a retrospective, longitudinal design (Menard, 1991). Key variables were measured at one point in time; however, the independent variables were measured by asking respondents to reflect on actions and attributes prior to the time of the hiring actions of the rival. One cannot conclude that the independent variables caused the dependent variable, only that they were associated. While retrospective designs provide valid and reliable information (Miller et al., 1997), future researchers may want to consider more traditional longitudinal designs.

Another potential limitation was the use of one informant per organization (Gerhart, Wright, McMahon, & Snell, 2000). The informants for this study were not asked to provide information at a level of detail beyond their cognitive processing. The interview practices used were consistent with Miller et al.'s (1997) guidelines for maximizing the validity of retrospective reports: (1) All informants were knowledgeable about the hiring events and response or nonresponse to them. (2) Informants' memories were prompted by customizing survey questions to the focal hiring events and labor market rivals (see Appendix A). (3) Surveyors ensured the informants were employed by their current organizations at the time of the organizations' loss of employees and subsequent response. (4) Informants were promised confidentiality. (5) Emotional involvement was reduced by using the term "loss of employees" rather than loaded term "talent raid." And, finally, having the surveyors enter the data as informants provided it dramatically reduced the coding errors typically associated with paper-and-pencil surveys (Catlin & Ingram, 1988).

A single-informant design also raises the specter of monomethod bias. Informants providing data for both dependent and independent variables may have implicit theories or other biases that artificially inflate the relations between variables (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, in an analysis of almost 43,000 correlations, one study concluded "percept-percept inflation may be more the exception than the rule in [re-

search] on organizations" (Crampton & Wagner, 1994: 72). Smaller-scale studies in other disciplines have documented higher error rates (Cote & Buckley, 1987). Thus, while the weight of the evidence in the organizational sciences suggests correlation inflation associated with this study's data collection method is not substantial, future researchers are advised to collect data from multiple sources and/or informants.

Another limitation is the limited generalizability of the results. The purpose of this study was to develop and test a theory of human resource competition. The software industry was used to capitalize on its expected hypercompetitive labor market dynamics. The findings here may not apply in industries with fewer employees and/or less labor market competition.

Although the data provided substantial support for the hypotheses, the full intentions of the actions of the hiring and target firms were unknown. In an effort to overcome this limitation, the surveyors asked the informants of the targeted firms to indicate if they believed the hiring firms purposefully recruited their employees. Furthermore, the items measuring targets' responses to each rivals' actions asked respondents if the actions were taken "in direct response" to the actions of the hiring firm. By only including firms whose key informants perceived intentionality on the part of the hiring firms, the sample may have been biased toward firms that took action. Future researchers should more clearly specify the intentionality of labor market rivals and utilize appropriate methodology to document that intentionality.

As mentioned above, each target firm was asked about only one set of interactions with one hiring firm. The possibility existed that a target firm had lost multiple employees to the same or another rival prior to the survey. If so, past action/nonaction in response to the previous loss of employees to a rival may have impacted the propensity of the target firm to respond to the loss of employees documented in this study. This study also did not measure or control for the HR practices of target firms. Target firms' HR strategies may have influenced whether employees left them and/or how the firms responded to the losses. Future researchers should either measure and control for past competitive interactions and HR systems or explicitly include these dynamics in their theoretical models.

Finally, some readers may be concerned that a study such as this may encourage what they consider the unethical and illegal practice of hiring employees from rival firms. The U.S. judicial system makes a strong distinction between hiring multiple employees from a competitor and misappropriating trade secrets—that is, inappropriately using the hired employees' knowledge (Bui-Eve, 1997). This paper focused on the hiring of employees and not on the use of their knowledge. In capitalist democracies, employees are free to choose where they work and firms are free, within boundaries, to choose where to recruit employees, and even to focus their efforts on one employer (Borwin, 1999; Bui-Eve, 1997).

priating trade secrets—that is, inappropriately using the hired employees' knowledge (Bui-Eve, 1997). This paper focused on the hiring of employees and not on the use of their knowledge. In capitalist democracies, employees are free to choose where they work and firms are free, within boundaries, to choose where to recruit employees, and even to focus their efforts on one employer (Borwin, 1999; Bui-Eve, 1997).

Implications for Managers

This study has implications for managers considering hiring or "talent raiding" employees from their rivals and for managers seeking to avoid the loss of employees to rivals or to diffuse the consequences of such loss. Managers seeking to hire multiple employees from a rival should be interested in identifying the factors that decrease the probability of defensive-retaliatory responses. The results suggest systematically hiring employees with valuable, transferable skills dramatically increases the likelihood of defensive retaliation. Since general skills are available in the open labor market, without the risk of retaliation, managers are advised to seek these skills through regular hiring channels. Future research will be required to provide insights for target firms about the effectiveness of the three types of responses to the actions of labor market rivals. The present study provides an inventory of the three types of responses and ten specific actions firms commonly use to respond. Managers of victim firms may consider adding these actions to their repertoires. Secondly, this study demonstrates that firms observe and respond to their labor market rivals. Rather than defending the loss of employees with competitive responses, firms may want to consider which employees are at the most risk of being raided and take preemptive defensive actions. This might include the use of noncompete agreements, various types of "golden handcuffs," and other actions that tie vulnerable employees to firms. The results also provide insights into the factors that drive normative responses to the actions of labor market competitors. Clearly, not all rivals' hiring actions deserve responses; but if firms can identify circumstances surrounding the actions of labor market rivals, they can choose to respond to the actions most threatening to crucial human and knowledge assets.

REFERENCES

- Adler, B. T. 1999. Do non-compete agreements really protect you? *Workforce*, 78(12), December: 48-55.

- Aiken, L. S., & West, S. G. 1991. **Multiple regression: Testing and interpreting interactions**. Newbury Park, CA: Sage.
- Andersson, L. M., & Pearson, C. M. 1999. Tit for tat? The spiraling effect of incivility in the workplace. *Academy of Management Review*, 24: 452-472.
- Bailey, K. D. 1994. **Typologies and taxonomies: An introduction to classification techniques**. Thousand Oaks, CA: Sage.
- Baum, J. A. C., & Korn, H. J. 1996. Competitive dynamics of interfirm rivalry. *Academy of Management Journal*, 39: 255-291.
- Bendor, J., Kramer, R. M., & Stout, S. 1991. When in doubt. . Cooperation in a noisy prisoner's dilemma. *Journal of Conflict Resolution*, 35: 691-719.
- Bies, R. J., Tripp, T. M., & Kramer, R. M. 1997. At the breaking point: Cognitive and social dynamics of revenge in organizations. In R. A. Giacalone & J. Greenberg (Eds.), **Antisocial behavior in organizations**: 18-36. Thousand Oaks, CA: Sage.
- Blanchard, D. C., & Blanchard, R. J. 1984. Affect and aggression: An animal model applied to human behavior. In R. J. Blanchard & D. C. Blanchard (Eds.), **Advances in the study of aggression**: 1-62. New York: Academic Press.
- Bland, T. S., & Harkavy, M. S. 2000. It's all in their heads. *Security Management*, 44(9): 92-96.
- Bordwin, M. 1999. It's a raid! *Management Review*, March: 58-61.
- Boudreau, J. W. 1992. Utility analysis for decisions in human resource management. In M. D. Dunnette & L. M. Hough (Eds.), **Handbook of industrial and organizational psychology**, vol. 3 (2nd ed.): 621-745. Palo Alto, CA: Consulting Psychologists Press.
- Brush, C. G., & Vanderwerf, P. A. 1992. A comparison of methods and sources for obtaining new venture performance. *Journal of Business Venturing*, 7: 157-170.
- Bui-Eve, H. 1997. To hire or not to hire: What Silicon Valley companies should know about hiring competitors' employees. *Hastings Law Journal*, 48: 981-1027.
- Cappelli, P. 1999. **The new deal at work: Managing the market driven workforce**. Boston: Harvard Business School Press.
- Catlin, G., & Ingram, S. 1988. The effects of CATI on costs and data quality: A comparison of CATI and paper methods in centralized interviewing. In R. M. Groves, P. P. Biemer, L. E. Lyberg, J. T. Massey, W. L. Nicholls, & J. Waksberg (Eds.), **Telephone survey methodology**: 437-450. New York: Wiley.
- Chen, M.-J. 1996. Competitor analysis and interfirm rivalry: Toward a theoretical integration. *Academy of Management Review*, 21: 100-134.
- Chen, M.-J., & MacMillan, I. C. 1992. Nonresponse and delayed response to competitive moves: The roles of competitor dependence and action irreversibility. *Academy of Management Journal*, 35: 539-570.
- Chen, M.-J., & Miller, D. 1994. Competitive attack, retaliation and performance: An expectancy-valence framework. *Strategic Management Journal*, 15: 85-102.
- Chen, M.-J., Smith, K. G., & Grimm, C. M. 1992. Action characteristics as predictors of competitive responses. *Management Science*, 38: 439-455.
- Clark, W. A. V., & Withers, S. D. 1999. Changing jobs and changing houses: Mobility outcomes of employment transitions. *Journal of Regional Science*, 39: 653-673.
- Coff, R. W. 1997. Human assets and management dilemmas: Coping with hazards on the road to resource-based theory. *Academy of Management Review*, 22: 374-402.
- Coff, R. W. 1999. How control in human-asset intensive firms differs from physical-asset intensive firms: A multi-level approach. *Journal of Managerial Issues*, 11: 389-405.
- Cote, J. A., & Buckley, R. 1987. Estimating trait, method, and error variance: Generalizing across 70 construct validation studies. *Journal of Marketing Research*, 24: 315-318.
- Crampton, S. M., & Wagner, J. A. 1994. Percept-percept inflation in micro-organizational research: An investigation of prevalence and effect. *Journal of Applied Psychology*, 79: 67-77.
- D'Aveni, R. A. 1994. **Hypercompetition: Managing the dynamics of strategic maneuvering**. New York: Free Press.
- Delery, J. E., & Shaw, J. D. 2001. The strategic management of people in work organizations: Review, synthesis, and extension. In G. R. Ferris (Ed.), **Research in personnel and human resource management**, vol. 20: 165-197. Greenwich, CT: JAI Press.
- Dess, G. G., & Robinson, R. B. 1984. Measuring organizational performance in the absence of objective measures: The case of the privately held firm and conglomerate business unit. *Strategic Management Journal*, 5: 265-273.
- Dessendre, C. D., & Moline, I. 1999. Migration and changing employment status: A hazard function analysis. *Journal of Regional Science*, 39: 103-123.
- Diamantopoulos, A., & Winklhofer, H. M. 2001. Index construction with formative indicators: An alternative to development. *Journal of Marketing Research*, 38: 269-277.
- Dutton, J. E., & Jackson, S. E. 1987. Categorizing strategic issues: Links to organizational action. *Academy of Management Review*, 12: 76-90.
- Federal Highway Administration. 1995. **Nationwide Personal Transportation Survey**. www.cta.ornl.gov/npts/1995. Accessed August 8, 2001.

- Fehr, E., & Gächter, S. 2002. Altruistic punishment in humans. *Nature*, 41: 225-237.
- Felson, R. B. 1982. Impression management and the escalation of aggression and violence. *Social Psychology Quarterly*, 45: 245-254.
- Ferrier, W. J. 2001. Navigating the competitive landscape: The drivers and consequences of competitiveness aggressiveness. *Academy of Management Journal*, 44: 858-877.
- Finlay, W., & Coverdill, J. E. 2002. *Headhunters: Matchmaking in the labor market*. Ithaca, NY: Cornell University Press.
- Freund, R. J., & Wilson, W. J. 1998. *Regression analysis: Statistical modeling of a response value*. San Diego: Academic Press.
- Gardner, T. M. 2002. In the trenches at the talent wars: Competitive interaction for scarce human resources. *Human Resource Management*, 41: 225-237.
- Gerhart, B., Wright, P. M., McMahan, G. C., & Snell, S. A. 2000. Measurement error in research on human resource decisions and firm performance: How much error is there and how does it influence effect size estimates? *Personnel Psychology*, 53: 803-834.
- Gulati, R., & Singh, H. 1998. The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly*, 43: 781-814.
- Heil, O. P., & Walters, R. G. 1993. Explaining competitive reactions to new products: An empirical signaling study. *Journal of Product Innovation Management*, 10(1): 53-65.
- Hinkin, T. R., & Tracey, J. B. 1999. An analysis of variance approach to content validation. *Organizational Research Methods*, 2: 175-186.
- Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. 2001. Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*, 44: 13-28.
- ITAA News. 2001. Close to 500,000 jobs will go unfilled in the IT sector in 2001. www.itaa.org/news/pr/PressRelease.cfm?ReleaseID=1020695700. Accessed July 8, 2002.
- Jaccard, J. 2001. *Interaction effects in logistic regression*. Thousand Oaks, CA: Sage.
- Karnani, A., & Wernerfelt, B. 1985. Multiple point competition. *Strategic Management Journal*, 6: 87-96.
- Kassel, A. 1999. OneSource Information Services, Inc. soars with CorpTech under wing. *Information Today*, 16(9): 60.
- Kuperaman, R. D. 2001. Rules of military retaliation and their practice by the State of Israel. *International Interactions*, 27: 297-326.
- Lee, T. W., & Maurer, S. D. 1997. The retention of knowledge workers with the unfolding model of voluntary turnover. *Human Resource Management Review*, 7: 247-275.
- Lepak, D. P., & Snell, S. A. 1999. The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review*, 24: 31-48.
- Luckenbill, D. F. 1977. Criminal homicide as a situated transaction. *Social Problems*, 25: 176-186.
- McGrath, R. G., Chen, M.-J., & MacMillan, I. C. 1998. Multimarket maneuvering in uncertain spheres of influence: Resource diversion strategies. *Academy of Management Review*, 23: 724-740.
- Menard, S. 1991. *Longitudinal research*. Newbury Park, CA: Sage.
- Milkovich, G. T., & Newman, J. M. 1993. *Compensation* (4th ed.). Homewood, IL: Irwin.
- Miller, C. C., Cardinal, L. B., & Glick, W. H. 1997. Retrospective reports in organizational research: A reexamination of recent evidence. *Academy of Management Journal*, 40: 189-204.
- Milliken, F. J. 1987. Three types of perceived uncertainty about the environment: State, effect and response uncertainty. *Academy of Management Review*, 12: 133-143.
- Nanda, A. 1996. Resources, capabilities, and competencies. In B. Moingeon & A. Edmondson (Eds.), *Organizational learning and competitive advantage*: 93-120. London: Sage.
- Onuf, N. G. 1974. *Reprisals: Rituals, rules, rationales*. Princeton, NJ: Center for International Studies, Princeton University.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88: 879-903.
- Porter, M. E. 1980. *Competitive strategy*. New York: Free Press.
- Powers, D. A., & Xie, Y. 2000. *Statistical methods for categorical data analysis*. San Diego: Academic Press.
- Ramanujam, V., Venkatraman, N., & Camillus, J. C. 1986. Multiobjective assessment of the effectiveness of strategic planning: A discriminant analysis approach. *Academy of Management Journal*: 347-372.
- Ramaswamy, V., Gatignon, H., & Reibstein, D. J. 1994. Competitive marketing behavior in industrial markets. *Journal of Marketing*, 58: 45-55.
- Rao, H., & Drazin, R. 2002. Overcoming resource constraints on product innovation by recruiting talent from rivals: A study of the mutual fund industry, 1986-94. *Academy of Management Journal*, 45: 491-507.
- Rumelt, R. P., Schendel, D., & Teece, D. J. 1991. Strategic

- management and economics. *Strategic Management Journal*, 12: 5-29.
- Rynes, S. L., & Barber, A. E. 1990. Applicant attraction strategies: An organizational perspective. *Academy of Management Review*, 15: 286-310.
- Schmidt, F. L., Hunter, J. E., McKenzie, R. C., & Muldrow, T. W. 1979. Impact of valid selection procedures on work-force productivity. *Journal of Applied Psychology*, 64: 609-626.
- Schwartz, J., & Salamone, S. 1999. *Wal-Mart's hard lesson*. www.internetweek.com/story/showArticle.jhtml?articleID=6404379. Accessed October 1, 2002.
- Scott, J. P. 1975. *Aggression*. Chicago: University of Chicago Press.
- Smith, K. G., Ferrier, W. J., & Ndofor, H. 2001. Competitive dynamics research: Critique and future directions. In M. A. Hitt, R. E. Freeman, & J. S. Harrison (Eds.), *The Blackwell Handbook of strategic management*: 315-361. London: Blackwell Publishers.
- Spence, M. 1973. Job market signaling. *Quarterly Journal of Economics*, 87: 355-374.
- Stevens, M. 1994. A theoretical model of on-the-job training with imperfect competition. *Oxford Economic Papers*, 46: 537-562.
- Teece, D. J., Pisano, G., & Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18: 509-533.
- Trevor, C. O. 2001. Interactions among actual ease-of-movement determinants and job satisfaction in the prediction of voluntary turnover. *Academy of Management Journal*, 44: 621-638.
- van den Berg, G. J., & Gortner, C. 1997. Job search and commuting time. *Journal of Business and Economic Statistics*, 15: 269-281.
- Weiner, B. 1995. *Judgments of responsibility*. New York: Guilford Press.

APPENDIX A

Verbatim Items Used to Measure Study Variables

Screening Questions to Identify Companies Losing Two or More Employees to Same Rival

1. Since 1999, did you have two or more employees resign from your company to work for the same company?
2. Did at least two of these employees leave within 12 months of one another?
3. Do people in your firm generally believe that [insert Hiring Company]^a purposefully recruited employees from your company?

^a The CATI system inserted the name of the hiring company, which was collected in an unreported question.

Defensive Actions following the Loss of Employees

1. In direct response to this loss of the employees we have been discussing, did your firm significantly improve communications from upper management to employees?
2. In direct response to this loss of employees, did your firm increase the pay or benefits of any group of employees?
3. In direct response to this loss of employees, did your firm begin requiring employees who were not previously required to sign post-employment agreements?
4. In direct response to this loss of employees, did any executives from your company contact someone at [insert Hiring Company]^a to ask them to stop hiring your employees?
5. In direct response to this loss of employees, did your firm seek outside mediation to prevent this firm from hiring more of your employees?
6. In direct response to this loss of employees, did your firm take any other action that would make it more difficult for the same or other firms to successfully hire your employees in the future?

Retaliatory Actions following the Loss of Employees

7. In direct response to this loss of employees, did your firm threaten any type of legal action against [insert Hiring Company]^a?
8. In direct response to this loss of employees, did your firm take any legal action against [insert Hiring Company]^a?
9. In direct response to this loss of employees, did your company attempt to recruit one or more employees from [insert Hiring Company]^a?
10. In direct response to this loss of employees, did your company sever any business relationships with [insert Hiring Company]^a?
11. In direct response to this loss of employees, did anyone in your company encourage other companies to sever business relationships with [insert Hiring Company]^a?
12. In direct response to this loss of employees, did your company take any other action that had the intention of punishing or retaliating against [insert Hiring Company]^a?

Local Labor Market Competitor

1. Is the headquarters of [insert Hiring Company]^a located within one day's driving distance of where your employees used to work?^b
2. We'd like to get a better sense as to how far away [insert Hiring Company]^a is located from where your former employees worked. If one were to start driving at 2:00 in the afternoon on a Wednesday from where these employees worked, how many minutes would it take to drive to the offices of [insert Hiring Company]^a?

^b Screening question used to decide whether to ask next question.

Product-Market Overlap

1. Are sales of software and/or computer programming services a significant source of revenues for [insert Hiring Company]^a?
2. How similar are the products and services offered by [insert Hiring Company]^a to your company's products and services? (1 = very different, 2 = different, 3 = similar, 4 = highly similar)
3. How much overlap is there between your company's pool of current and potential customers and the pool of current and potential customers of [insert Hiring Company]^a? (1 = no overlap at all, 2 = a small amount of overlap, 3 = a moderate amount of overlap, 4 = a great deal of overlap)

Human Capital Value

1. If you could replace one person with low job performance in this job^c with one person with average job performance, after one year how much impact could that one change have on the profitability of your company? This impact could either come through reducing costs or increasing revenues. (1 = no impact at all, 2 = very little impact, 3 = some impact, 4 = a great deal of impact)
2. If you could replace one person with average job performance in this job^c with one person with excellent job performance, after one year how much impact could that one change have on the profitability of your company? This impact could either come through reducing costs or increasing revenues. (1 = no impact at all, 2 = very little impact, 3 = some impact, 4 = a great deal of impact)

Transferability of Human Capital

1. How much of the knowledge and skills that employees learn on this job^c at your company, could be used in a similar job at a typical company in the software industry? In particular, we're interested in the knowledge and skills they learn beyond what they knew before joining your company. (1 = none, 2 = very little, 3 = some, 4 = a significant portion, 5 = a great deal)
2. While employed at your company, employees in this job^c learn skills that significantly increase their ability to move from one job to another in the high tech industry. (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree)

^c In questions not reported, the surveyors used a series of questions to identify the job occupied by the raided employees. If employees were raided from more than one job, the surveyors identified the job formerly occupied by the majority of the raided employees.

Violation of Noncompete Agreement

1. To protect their competitive advantage, some companies have employees sign agreements restricting their activities after they leave the company. For instance, non-compete agreements that prohibit former employees from working for competing firms. Back when your company realized they had been raided were the employees in this job^c typically required to sign non-compete agreements? (1 = yes, 0 = no)
2. Non-compete agreements usually contain a clause restricting where an employee can work after they leave the company. Did the non-compete agreement that covered the employees in this job^c specifically prohibit them from working at [insert Hiring Company]^a? (1 = yes, 0 = no)
3. Non-compete agreements usually contain a clause restricting employees from working for competitors for a specific period of time. How long did the non-compete agreement that covered employees in this job^c prohibit them from working for a competitor? (1 = 1 to 6 months, 2 = 7 to 12 months, 3 = 13 to 18 months, 4 = 19 to 24 months, 5 = longer than 24 months)^d
4. Sometimes non-compete agreements contain a clause restricting former employees from working at competitors in the same geographic area. Did the employment contract covering the employees in this job^c include a clause limiting the geographic area where they could work after they left the company?^b
5. Is [insert Hiring Company]^a located within the geographic area restricted by the non-compete agreement? (1 = yes, 0 = no)

APPENDIX B

Content Analysis of the Competitive Action Items

To assess the content validity of the a priori classification of the ten actions into defensive and retaliatory categories, I used Hinkin and Tracey's (1999) methods for content validation. Convenience sampling was used to recruit 53 students and faculty members from two universities to participate in the study. Each participant received two sets of the list of ten actions. The definitions of a defensive and a retaliatory response to the loss of multiple employees to a rival were at the top of each page. Participants were asked to rate each item for agreement with each definition on a five-point Likert-type scale (1, "not at all consistent," to "completely consistent"). As an improvement on the methodology, MANOVA with repeated measures was used to examine the mean differences across all ten items simultaneously.

There was a significant, main, within-subject effect for the two definitions ($F = 81.96, p < .0001$). Ten separate univariate tests (with the appropriate Bonferroni adjust-

^d To ensure equal weighting of this item with other items of the index, I transformed the rating on the numerical scale by dividing it by five.

ment) showed that all ten actions were rated as significantly different in their degrees of congruence with a defensive action than as to their degree of congruence with the definition of a retaliatory action ($p < .001$ for all ten items). Although not part of the Hinkin and Tracey (1999) methodology, a post hoc test was used to assess convergent and discriminant content validity. Two sets of ten one-sample t -tests with an adjusted alpha of .005 were used to assess whether defensive and retaliatory items were rated significantly higher than 3 on the five-point scale of their respective definitions and lower than 3 for the non a priori definitions. Results suggested that all ten items were rated significantly above the midpoint of congruence with their respective definitions (all p 's were $< .0001$) and below 3 for the non a priori definitions

($p < .0001$) These results strongly support the a priori classification of these actions into the defensive and retaliatory categories.



Tim Gardner (tmg13@byu.edu) is an assistant professor of organizational leadership and strategy at the Marriott School of Management at Brigham Young University. He earned his Ph.D. at the School of Industrial and Labor Relations at Cornell University. His current research interests include labor market competition and strategic human resource management.

