

## The Too-Much-of-a-Good-Thing Effect in Management

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### **Abstract:**

A growing body of empirical evidence in the management literature suggests that antecedent variables widely accepted as leading to desirable consequences actually lead to negative outcomes. These increasingly pervasive and often countertheoretical findings permeate levels of analysis (i.e., from micro to macro) and management subfields (e.g., organizational behavior, strategic management). Although seemingly unrelated, the authors contend that this body of empirical research can be accounted for by a meta-theoretical principle they call the *too-much-of-a-good-thing effect* (TMGT effect). The authors posit that, due to the TMGT effect, all seemingly monotonic positive relations reach context-specific inflection points after which the relations turn asymptotic and often negative, resulting in an overall pattern of curvilinearity. They illustrate how the TMGT effect provides a meta-theoretical explanation for a host of seemingly puzzling results in key areas of organizational behavior (e.g., leadership, personality), human resource management (e.g., job design, personnel selection), entrepreneurship (e.g., new venture planning, firm growth rate), and strategic management (e.g., diversification, organizational slack). Finally, the authors discuss implications of the TMGT effect for theory development, theory testing, and management practice.

**Keywords:** management theory | scientific progress | epistemology | meta-theory

### **Article:**

The experience at the Columbia Conserve Company . . . offers valuable insights into . . . attempts to . . . invest workers with greater power and authority . . . Between 1917 and 1929 the company generated consistent profits . . . and business had expanded to 240 cities and thirty-five states. By September 1942, however, . . . workers at Columbia Conserve had voted to [unionize] and waged a five-day strike to press their demands . . . [because they] did not share Hapgood's commitment to creating a democratized workplace. [Ultimately,] Columbia's shaky financial status led [Hapgood] to sell the company. (Bussel, 1997: 420, 423, 438, 439)

At its peak, Nortel Networks was regarded as one of the fastest-moving companies on the planet for its ability to be swift to the market with new products and quick to integrate acquisitions. During a 2000 speech . . . then-Chief Operating Officer Clarence Chandran . . . boasted that after closing a deal, Nortel replaced the old firm's name with Nortel stationary, coffee mugs and T-shirts within 24 hours. [Ironically,] the dismantling of Nortel is coming in a similarly organized fashion . . . [as] the company is now being broken into pieces and sold off to its competitors (Vinluan, 2009). Analysts say [the CEO's] aggressive acquisition strategy can be directly traced to the firm's massive cuts and the piles of red ink. Many . . . now view [his] time at the helm as, on balance, a failure. ("Nortel Networks Corp.," 2001)

When People Express first began operations in 1980, it flew three airplanes and served only ten cities. Its philosophy was simple: low costs, no frills, low fares, and fast growth. By 1986 the airline had grown to be the fifth largest domestic carrier, operating out of 100 airports with a fleet of 122 planes. [Though] People had no trouble filling seats with its discounted fares . . . People Express had trouble paying its [increasing] bills. By 1987 People Express had sold off its assets and disappeared under the corporate umbrella of Texas Air [because] the company had grown too big, too fast. (Mayo & Jarvis, 1992: 5)

The preceding three accounts appear to have little in common. Apart from their undesirable conclusions, they portray different phenomena at different levels of analysis taking place in diverse contexts. However, their common underlying theme is that each illustrates how antecedents widely accepted as desirable—empowerment, diversification, and growth rate—actually led to negative outcomes. Though some may dismiss these countertheoretical anecdotes as anomalies and exceptional cases, a growing body of empirical research across management subfields suggests that these paradoxical outcomes occur with regularity and, hence, deserve closer scrutiny.

The purpose of our article is to present a meta-theoretical principle to account for these apparently paradoxical results that, to date, lack a common and coherent explanation. A meta-theoretical principle is necessary because the phenomenon in question spans the subfields of management, ranging from micro (i.e., organizational behavior and human resource management) to meso (e.g., entrepreneurship) and macro (e.g., strategy) levels of analysis (Aguinis, Boyd, Pierce, & Short, 2011). We refer to this principle as the *too-much-of-a-good-thing effect* (TMGT effect). The TMGT effect accounts for an apparent paradox in organizational life: ordinarily beneficial antecedents causing harm when taken too far.

This article is organized as follows. First, we describe the conceptual and epistemological background and a formalized theory of the TMGT effect. Second, we provide evidence to illustrate the TMGT effect's relevance and ubiquity in key areas of organizational behavior, human resource management, entrepreneurship, and strategic management. Finally, we describe implications of the TMGT effect for theory development, theory testing, and management practice.

## **The Too-Much-of-a-Good-Thing Effect**

### Conceptual and Epistemological Background

The TMGT effect occurs when ordinarily beneficial antecedents (i.e., predictor variables) reach inflection points after which their relations with desired outcomes (i.e., criterion variables) cease to be linear and positive. Exceeding these inflection points is always undesirable because it leads either to waste (no additional benefit) or, worse, to undesirable outcomes (e.g., decreased individual or organizational performance). The philosophical tenet underlying the TMGT effect is that too much of any good thing is ultimately bad. This tenet pervades all aspects of life, from the physical (e.g., hydration; Kim, 2009) to the social (e.g., power and politics).

Proverbs and aphorisms, such as the Chinese “too much can be worse than too little” and its Western counterpart “everything in moderation; nothing in excess,” suggest that this principle is widely accepted across cultures. In fact, these and similar sayings in both Eastern and Western cultures trace back to philosophers whose teachings have been highly influential in their respective regions (e.g., Aristotle and Confucius; Phillips, 2004). Modern scholars of philosophy have labeled this universal advocacy for proportionality over extremity the *doctrine of the mean* (Confucius, 2004; Urmson, 1973). For its proponents, pursuing the Golden Mean, as it is also known, was a moral as well as practical imperative (Hamburger, 1959). In Confucius’s words, “Perfect is the virtue which is according to the Mean!” (2004: 2).

Although influential philosophers have highlighted and promoted this concept, the management literature includes relatively few discussions of the need for balance between deficiency and excess. Rather, we, management and organizational science scholars, tend to focus on addressing the former, with less concern for the latter. Consequently, the assumption that “more is better” implicitly drives our efforts to maximize desired outcomes through theory development and application. In our quest to maximize individual, group, and organizational performance, we scholars usually propose and test hypotheses describing linear relations between these criteria and their determinants. Confirmation of such hypotheses reinforces our “more is better” assumption and leads us to conclude that linear relations best characterize important organizational relations (e.g., firm resources and performance; Barney, 1991; conscientiousness and job performance; Barrick, Mount, & Judge, 2001) when in reality they may not. Through subsequent management discourse, these theories become part of institutional logics, fashions, or fads among researchers and practitioners (Abrahamson & Fairchild, 1999), and their perceived legitimacy may perpetuate rather than mitigate against false understanding and misguided decisions (Christensen-Szalanski & Beach, 1984; David & Strang, 2006; Staw & Epstein, 2000).

Theoretical progress occurs when scholars identify faulty logical or empirical inferences (Platt, 1964) and update or develop new theories to address them. Although new or updated theories must differ from their predecessors in some way, the decision-making process used to develop them is typically guided by some of the same or similar principles, presumptions, and perspectives. That is, theorists tend to use the same set of widely held accepted heuristics to update and revise earlier theories. When the heuristics underlying the theory development process are deficient, however, meta-theory is needed. We contend that the common presumption of monotonic linear relations leads to the development and proliferation of theories with a common deficiency—failure to take the TMGT effect into account—making the introduction of a meta-theory necessary.

Meta-theories are theories of or about theories and are classified into one of two categories: (a) philosophical and (b) formalized. Philosophical meta-theories address theory in general and describe what theories are, what they should do, and how scholars should develop them (e.g., Bacharach, 1989; Einstein, 1934; Popper, 1963). Alternatively, formalized meta-theories are overarching principles that transcend specific topics or domains of study. Such formalized meta-theories describe and predict phenomena in more abstract terms or at a higher level than specific theories do (e.g., Blumberg & Pringle, 1982; Richter, 1986). Formalized meta-theories extract what is generally consistent across theories analogous to how meta-analysts extract what is generally consistent across primary-level studies (Aguinis, Dalton, Bosco, & Pierce, 2011; Rousseau, Manning, & Denyer, 2008). Although meta-theories of both types have potential to help advance the field of management, management scholars have focused more on philosophical meta-theories (e.g., deductive vs. inductive theorizing; Locke, 2007) than on formalized meta-theories. The challenge with formalized meta-theories is that they involve a sacrifice of depth (specificity) for breadth (generality) because there are context-specific boundary conditions that determine their relative explanatory power across contexts (an issue that we describe in more detail in the Implications for Future Research section). Thus, the value of formalized meta-theories lies in their ability to account for a wide variety of phenomena. Next, we define and describe a formalized meta-theory of the TMGT effect in management.

#### A Formalized Meta-Theory of the TMGT Effect

As noted earlier, the TMGT effect occurs when ordinarily beneficial antecedents reach inflection points after which their relations with desired outcomes cease to be linear and positive, instead yielding an overall curvilinear pattern. Though the TMGT effect involves a greater degree of complexity compared with simpler linear paradigms, the TMGT effect provides an enhancement and makes a value-added contribution to theory and practice because it accounts for a wide range of inconsistent and apparently paradoxical findings in the management literature. Management scholars have produced a number of mixed and conflicting findings and theories that have yet to be reconciled. With the presumption of linear relations, such mixed findings present a paradox because they suggest that, although not possible, at least two of the following three mutually exclusive theses be true simultaneously:

- *Thesis A*: Increases in beneficial antecedent  $X$  lead to increases in desired outcomes (i.e.,  $r_{xy} > 0$ ).
- *Thesis B*: Increases in the same beneficial antecedent  $X$  have no impact on desired outcomes (i.e.,  $r_{xy} = 0$ ).
- *Thesis C*: Increases in the same beneficial antecedent  $X$  lead to decreases in desired outcomes (i.e.,  $r_{xy} < 0$ ).

In other words, increasing  $X$  causes  $Y$  to increase (i.e., Thesis A), not change (i.e., Thesis B), and in some cases, decrease (i.e., Thesis C). This is a paradox because each possibility is tenable in isolation, but their combinations are not (Lewis, 2000). We resolve this paradox with the TMGT effect by adopting Poole and Van de Ven's (1989) second (separating levels of A and B) and fourth (introducing a new perspective and synthesizing new theory) methods.

First, we propose, that due to the TMGT effect, each  $X$ - $Y$  relation has a context-specific inflection point after which further increases in the otherwise beneficial antecedent  $X$  lead to less desired outcomes. That is, it is necessary to separate the conflicting theses above according to levels of  $X$  (i.e., Poole and Van de Ven's second method). Stated differently, all seemingly positive monotonic causal relations (i.e.,  $X \rightarrow Y$ ) reach a context-specific inflection point,  $I$ , after which they cease to be positive, resulting in an overall pattern of curvilinearity. In short, Thesis A holds when  $X$  is less than  $I$ , Thesis B holds when  $X$  is approximately equal to  $I$ , and Thesis C may hold when  $X$  is greater than  $I$ . The specific location of  $I$  on the  $X$  continuum depends on the particular context. The inflection points are context specific because what is excessive in one context may be insufficient in another. As we describe in the Implications for Future Research section, addressing the location of inflection points is the domain of relation-specific theorizing (e.g., at what specific point too much organizational citizenship behavior leads to negative instead of positive individual performance, at what specific point too much formal planning has no effect or even a negative instead of a positive effect on firm survival and success).

Second, the confirmation of Thesis C means that the relation follows an inverted U-shaped pattern, whereas lack of confirmation of Thesis C means that the relation follows an asymptotic pattern (i.e., Poole and Van de Ven's fourth method). In either case, increases in the focal antecedent lead to undesired outcomes. As a best-case scenario, escalating the focal antecedent leads to wasted energy and resources because there are no improvements or additional beneficial outcomes in spite of the increase in inputs (i.e., higher levels of the predictor variables). Worse yet, when Thesis C does hold, such increases lead to detrimental consequences—just the opposite of what is hoped for and desired. Although the presence of curvilinear relations has been noted in some domains (Richter, 1986; Weick, 1979), our meta-theory suggests that a paradigmatic shift from linear to curvilinear models is needed to improve management theory and practice, regardless of level of analysis and subfield of study.

In spite of this conclusion, we acknowledge that some have advocated the practical utility of linear models over curvilinear models. For instance, Hastie and Dawes (2001) concluded that linear decision-making models efficiently approximate curvilinear phenomena subject to diagnostic or predictive judgment because most such phenomena are monotonic. Moreover, others have argued that ignoring nonlinearity simplifies the resulting models and this simplification may improve practical utility (Einhorn & Hogarth, 1975). While linear models may be more efficient and practical in some specific cases (e.g., diagnostic or predictive judgment), as we will describe later in our article understanding curvilinear relations is critical for both research and application.

Next, we review eight examples of seemingly unrelated research results in a subset of key areas in management that provide evidence of the TMGT effect. The objective of this review is to illustrate the pervasiveness and broad applicability of the TMGT effect across levels of analysis and subfields of study.

### **Evidence and Explanation of the TMGT Effect in Management**

In this section, we review eight seemingly unrelated bodies of scholarly work in key areas in organizational behavior, human resource management, entrepreneurship, and strategic management. Given the scope of the management literature, we could have included additional illustrations from these and from other subfields. Our choice was guided by the popularity of these subfields based on membership figures in Academy of Management Divisions as well as the centrality of our chosen topics within each subfield. While we regret that, due to space constraints, we are not able to include more subfields and examples in detail, we briefly mention additional evidence at the conclusion of this section.

#### Organizational Behavior Example A: Leadership

For over half a century, organizational scholars have examined initiating structure (i.e., instrumental command and control, hereafter *structure*) and individualized consideration (i.e., concern for followers' needs; hereafter *consideration*; see Fleishman & Harris, 1962, for more comprehensive definitions) as fundamental components of leadership (Judge, Piccolo, & Ilies, 2004). Though these dimensions seem somewhat opposed to each other, Judge et al.'s (2004) meta-analytic results ascertained that both are positively related to desirable organizational outcomes. Moreover, Judge et al. referred to these constructs as the "forgotten ones." The reason for this label is that after initial popularity, structure and consideration fell out of favor with researchers due to mounting conclusions that their predictive validity was low (Korman, 1966: 360), weak (Yukl, 1998: 49), and inconsistent (Northouse, 1997).

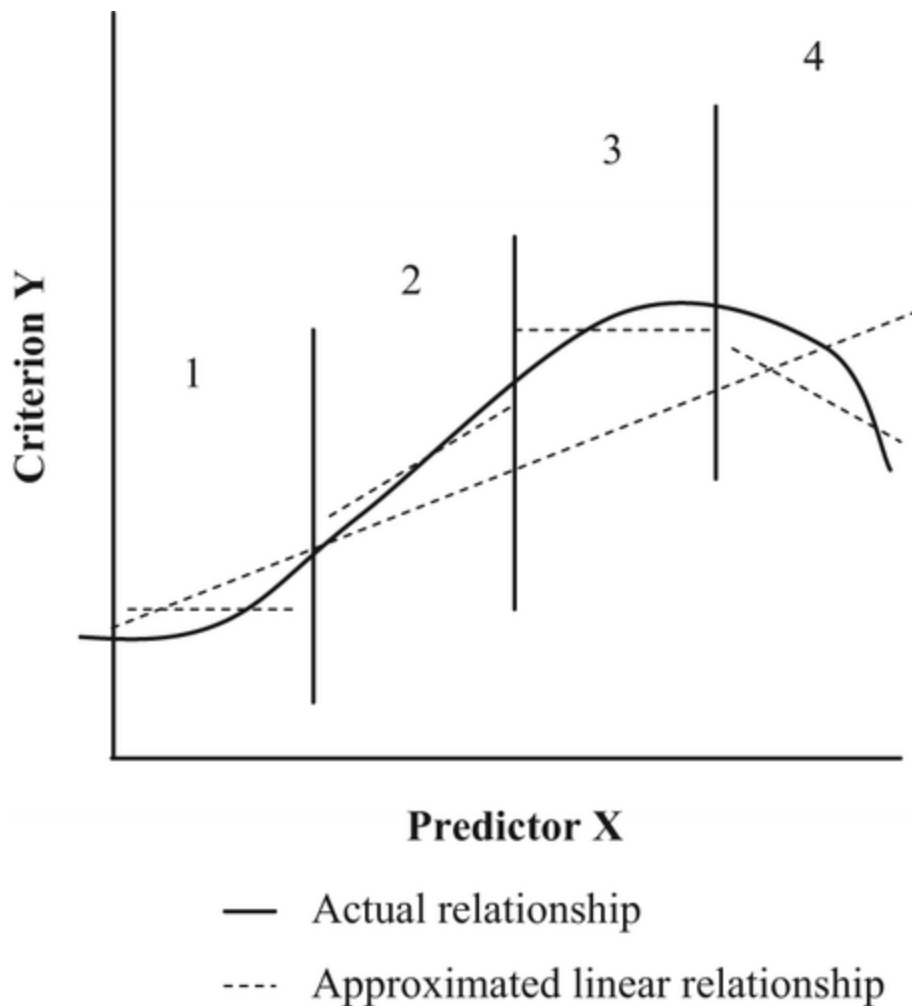
Fleishman (1998) offered a potential explanation for these pessimistic conclusions and argued that the relation among structure and consideration and many highly desirable individual and organizational outcomes is not linear but curvilinear. Specifically, Fleishman and Harris (1962) found that "grievances and turnover were shown to increase most markedly at the extreme ends of the Consideration and Structure scales" (Fleishman, 1998: 829). They also found that the inflection points in the relations moved along the structure and consideration range of scores, depending on values of additional moderator variables (i.e., boundary conditions). Although Fleishman himself and others acknowledged that curvilinear relations were "difficult to find" (Fleishman, 1998: 831; Judge et al., 2004), more recent research supports Fleishman's contentions. For example, Ames and Flynn (2007) hypothesized and showed that high levels of traits related to both structure (i.e., dominance) and consideration (i.e., sociability) can have detrimental effects. Their qualitative and quantitative analyses revealed leadership ineffectiveness to be associated with both low and high levels of assertiveness (i.e., the intersection of dominance and sociability). Study participants mentioned low and high assertiveness as a sign of leader weaknesses more than other traits are. Ames and Flynn also found statistically significant negative quadratic terms for assertiveness when predicting overall and specific leadership competencies in their second and third studies, indicating an inverted U-shaped pattern. Moreover, they demonstrated that these inverted U-shaped relations held when separated into their instrumental (structure) and social (consideration) components. In sum, although effective leadership depends on structure and consideration, growing evidence (also see Harris & Kacmar, 2006; Peterson, 1999) suggests that increasing them leads to positive

outcomes up to an inflection point after which they lead to detrimental outcomes for leaders, followers, and their organizations.

#### Organizational Behavior Example B: Conscientiousness

The five-factor model of personality (Barrick & Mount, 1991) has become the dominant paradigm in organizational behavior and related fields (e.g., industrial and organizational psychology). Of the five personality traits, conscientiousness has shown the most promise in terms of predicting individual performance. *Conscientiousness* refers to the degree to which an individual is dependable (i.e., careful, thorough, responsible, and organized), hardworking, achievement oriented, and persevering. Several independent studies have concluded that there is a positive relation between conscientiousness and multiple operationalizations of job performance (Barrick & Mount, 1991; Barrick et al., 2001; Organ & Ryan, 1995). In light of these findings, Barrick et al. concluded that conscientiousness predicts “success in virtually all jobs . . . , appears to be the trait-oriented motivation variable that industrial-organizational psychologists have long searched for, and should occupy a central role in theories seeking to explain job performance” (2001: 21-22).

Despite the expectation that conscientiousness is monotonically and positively related to performance, not all scholars remain convinced (Tett, 1998). Moreover, a meta-analytic review suggested that the sample-weighted mean correlation between conscientiousness and performance was not statistically different from zero (Tett, Jackson, & Rothstein, 1991). To make sense of these conflicting results, Whetzel, McDaniel, Yost, and Kim (2010) examined personality scale design as a potential moderator variable. Using a scale designed to identify quadratic relations, they found evidence ( $\Delta R^2 = .09$ ) of an inverted U-shaped relation between conscientiousness and objectively measured job performance (e.g., see Figure 1 in Whetzel et al., 2010: 317). In a similar effort to understand the shape of the relation between conscientiousness and individual performance, Le and colleagues (2011) examined the role of job complexity. They too found a nonlinear, inverted U-shaped relation between conscientiousness and three dimensions of job performance (i.e., task performance, organizational citizenship behavior, and counterproductive work behavior). Moreover, plots of their data indicated that the inflection point when the relation ceased to be positive and linear was lower for low-complexity jobs as compared with high-complexity ones.



**Figure 1** Illustration of How Range Restriction Occludes the Too-Much-of-a-Good-Thing (TMGT) Effect

In sum, conscientiousness appears to have a positive relation with individual performance up to a point after which increased conscientiousness can have a negative impact on performance.

#### Human Resource Management Example A: Enriched Job Design

Activation theory (Scott, 1966) inspired researchers (Hackman & Oldham, 1975, 1976; Sims, Szilagyi, & Keller, 1976) to develop and test motivation models of job design. According to these models, enriching jobs with more autonomy, responsibility, and meaning leads to increased psychological stimulation, which in turn leads to increased individual motivation and productivity. Although meta-analytic reviews (Fried & Ferris, 1987; Loher, Noe, Moeller, & Fitzgerald, 1985; Spector, 1986) have supported the validity of these models, a growing body of evidence challenges the notion of a monotonic and positive relation between job enrichment and important outcomes.

Champoux (1980, 1981, 1992), who extended Hackman and Oldham's job design model, contended and demonstrated in multiple studies that increasing job enrichment has diminishing



positive effects on employee motivation and performance. He also demonstrated in these studies that growth-need strength modified the nature of the curvilinear relations. Xie and Johns (1995) extended Champoux's work by showing that job scope (i.e., enrichment and complexity) also has a curvilinear relation with stress-induced exhaustion, which was further explained by perceived demands and ability to meet those demands. This work bridged Champoux's theory with parallel literature on job demands in which other scholars (De Jonge & Schaufeli, 1998; Karasek, 1979; Warr, 1990) have provided evidence that both work underload and work overload lead to undesired outcomes.

In sum, the foregoing evidence suggests that enriching jobs has a positive impact on psychological outcomes and employee performance up to a point. After this inflection point, however, the effect approaches zero and then it becomes negative.

#### Human Resource Management Example B: Experience in Personnel Selection Decisions

Personnel selection is one of the most popular topics in human resource management and related fields (e.g., industrial and organizational psychology; Cascio & Aguinis, 2008). A central objective of personnel selection research is to identify knowledge, skills, abilities, and other characteristics (KSAOs) that can be used as predictors of future employee performance. A commonly used indicator of KSAOs is experience. Several independent studies support the conclusion that, if hired, job applicants with more experience will perform better than their less experienced counterparts (Hunter & Hunter, 1984; McDaniel, Schmidt, & Hunter, 1988; Quiñones, Ford, & Teachout, 1995). In other words, these studies have found a positive relation between experience and job performance.

More recently, however, Sturman (2003) challenged the notion that experience has a linear relation with employee outcomes. Using meta-analytic methods, he demonstrated that the relation is actually curvilinear. Sturman showed that job and life experience have decreasing positive associations with job outcomes, which is consistent with the TMGT effect. He also showed that the relationships are moderated by job complexity such that they have an inverted U-shaped pattern (i.e., positive at low levels, neutral at moderate levels, and negative at higher levels) for low-complexity jobs but a more asymptotic form for high-complexity jobs.

In sum, recent evidence suggests that the TMGT effect applies to the relation between experience and employee performance. That is, increases in experience correspond to more desirable outcomes up to point, but after that inflection point, more experience does not lead to additional value and may actually lead to less desirable results.

#### Entrepreneurship Example A: New Venture Planning

Entrepreneurs commonly engage in a number of behaviors when initiating a new venture, namely, identifying business ideas; conducting research and planning; and acquiring economic, human, and informational resources (Duchesneau & Gartner, 1990). Of these, formal planning plays a particularly important role in the success of new ventures. Formal planning is "an explicit process for determining the firm's long-range objectives, procedures for generating and evaluating alternative strategies, and a system for monitoring the results of the plan when

implemented” (Armstrong, 1982: 198). The expectation is that formal planning is positively related to venture survival and success (Armstrong, 1982; Delmar & Shane, 2003; Duchesneau & Gartner, 1990). Consistent with this expectation, a meta-analysis of firms with fewer than 100 employees found that formal planning corresponded with higher firm outcomes using absolute (i.e., sales and revenue growth) and relative (i.e., returns on sales, assets, and investment) measures of firm performance (Schwenk & Shrader, 1993).

Despite what seems to be the prevailing view regarding the linear relation between planning and firm success, some “argue that the value [of planning] could turn negative” (Gruber, 2007: 787). For instance, Fredrickson and colleagues (Fredrickson & Iaquinto, 1989; Fredrickson & Mitchell, 1984) noted that too much formal planning may lead to lower levels of performance for new ventures because it may foster overconfidence (Hayward, Shepherd, & Griffin, 2006) and cognitive rigidity (Vesper, 1993). Consistent with this conclusion and the TMGT effect, Chrisman, McMullan, and Hall confirmed their hypothesis that “there are diminishing returns to scale in the relation between the amount of time that an entrepreneur spends in guided preparation [i.e., planning] and venture performance” (2005: 779) Specifically, they found evidence of an inflection point between 136 and 143 hours of pre-venture guided preparation with respect to sales and employment.

In sum, recent evidence suggests that the relation between formal planning and new venture survival and success should be conceptualized in light of an inflection point. Up to this point, increased formal planning contributes to the long-term survival and success of new firms, whereas after it increased planning has no benefit and may even have detrimental effects.

#### Entrepreneurship Example B: Firm Growth Rate

Firm growth is defined as an increase in profit-seeking activities, especially with respect to sales, marketing (e.g., product offerings), and the acquisition of related assets (including human capital; Baum & Locke, 2004; Baum, Locke, & Smith, 2001). Firm growth is a central issue in the field of entrepreneurship because new ventures start at zero on any performance metric and, hence, cannot survive without growth (Davidsson, Delmar, & Wiklund, 2002). Moreover, many scholars see entrepreneurship as “the function by which growth is achieved . . . not only the act of starting new businesses” (Stevenson & Jarillo, 1990: 21). For this reason, Sexton and Smilor contended that growth is “the very essence of entrepreneurship” (1997: 97). These prevailing views lead to the conclusion that a positive growth rate (i.e., the change in profit-seeking activities per unit time) is desirable (i.e., a good thing) because it promotes the survival and profitability of firms (Capon, Farley, & Hoenig, 1990; Eisenhardt & Schoonhoven, 1990).

In spite of this conclusion regarding the desirability of a positive growth rate, there is an accumulating body of empirical evidence suggesting that too much growth too fast may actually be detrimental to firm performance (Whetten, 1987: 341). Although rapid growth can provide firms with resources (e.g., revenue), increased sales and marketing also require additional financial and human resources (Eisenhardt & Schoonhoven, 1990). According to the finance and strategic management literatures (Higgins, 1977; Varadarajan, 1983), firms have sustainable growth rates past which the debt leverage strains resources and increases risk of failure. In

fact, Probst and Raisch (2005) concluded that excessive rates of growth contributed to 70% of the major corporate failures between 1998 and 2003. Prior to failing, the compound annual growth rate of these firms averaged 30%. Stated differently, these firms, on average, tripled in size in just five years just prior to collapsing. In addition, three analyses of publicly traded U.S. firms (Ramezani, Soenen, & Jung, 2002) demonstrated an inverted U-shaped relation between growth rate and firm performance, with the latter increasing monotonically with the former, up to a point, and then dropping off precipitously at higher rates of growth.

In sum, positive growth rates are beneficial because they are needed for firms to survive. As predicted by the TMGT effect, however, the evidence suggests that too much growth too fast leads to diminishing positive returns up to a point after which growth rate has a negative impact on firm success.

#### Strategic Management Example A: Diversification

In response to the Sherman Antitrust Act of 1890, which outlawed most forms of cartels, and the Celler-Kefauver Act of 1950, which limited vertical and horizontal mergers, organizational decision makers have turned to diversification strategies to increase profits (Dalton, Hitt, Certo, & Dalton, 2007: 26). Firms generally pursue diversification strategies by expanding their operations either into new industrial activities (i.e., industrial diversification) or into new geographic markets (i.e., geographic diversification). Both industrial and geographic forms of expansion can occur through internal ventures, strategic partnerships (i.e., joint ventures), or mergers and acquisitions (Caves, 2007; Pfeffer & Nowak, 1976; Pitts, 1977). A prevailing theoretical view is that diversification of all forms has a positive and linear relation with profitability (Gort, 1962; Marris, 1968) because diversification leads to the exploitation of market imperfections (Rugman, 1979) and power (e.g., reciprocal buyer–seller relationships; Grant, 2005; Sobel, 1999); increases efficiencies provided by economies of scale and scope (Caves, 2007) and internal capital markets (Stulz, 1990; Weston, 1969); and reduces firms' overall risk (Grant, 2005), tax liability (Majd & Myers, 1987), and market risk (Kim, Hwang, & Burgers, 1993).

In spite of the aforementioned prevailing theoretical arguments, there is a growing body of evidence suggesting that too much diversification may actually be detrimental to firm performance. With respect to industrial diversification, Lang and Stulz (1994) found that performance (Tobin's  $q$ ) diminished at higher levels of diversification as measured by number of segments and Herfindahl indices. In addition, Berger and Ofek (1995) found that high levels of conglomeration diminished the value of firms' business units by 13% to 15%. Similarly, too much geographic diversification may lead to diminished (Denis, Denis, & Yost, 2002; Michel & Shaked, 1986) or offsetting changes in firm performance (Geringer, Tallman, & Olsen, 2000; Tallman & Li, 1996). Taken together, these studies suggest that diversification may have a curvilinear relation with performance such that modest levels of diversification improve performance but too much diversification diminishes it. Qian, Li, Li, and Qian (2008) confirmed such curvilinearity in their study of regional diversification and found significant quadratic relations between regional diversification, and return on assets and return on sales.

In sum, although a prevailing theoretical view is that diversification has a linear and positive relation with performance, there is a growing body of empirical evidence that conforms to the TMGT effect. Too much diversification seems to have a negative effect on firm performance.

### Strategic Management Example B: Organizational Slack

Firms must be able to continually adapt their strategies to survive and thrive in their ever-changing dynamic environments. In order to execute such changes (e.g., exploiting opportunities for expansion, enduring economic downturns; Zhang & Rajagopalan, 2010), firms must have access to unallocated resources. These excess resources are usually referred to as “organizational slack” (Bourgeois, 1981). From the resource-based (Barney, 1991) and behavioral (Cyert & March, 1963) theoretical perspectives on the firm, organizational slack should be beneficial (Daniel, Lohrke, Fornaciari, & Turner, 2004). Consistent with this perspective, Daniel et al. (2004) and others (e.g., Bromiley, 1991; Singh, 1986) have found positive associations between slack and organizational performance.

Despite these apparently confirmatory results, there is an alternative theoretical perspective on slack. Based on agency theory, some scholars have argued that too much slack can be deleterious with respect to firm performance because it represents inefficient resource allocation and, worse yet, enables managers to engage in self-serving and value-destroying activities (Jensen, 1986; Jensen & Meckling, 1976). Consistent with a meta-theory of the TMGT effect, Bourgeois (1981: 31) offered a reconciliation of these competing perspectives when he hypothesized that “the correlation between ‘success’ and slack is positive, up to a point, then negative; in other words, the relationship is curvilinear ( $\cap$ ).” More recently reported evidence also provides support for this hypothesis. For example, Tan and Peng (2003) ascertained that firm performance had curvilinear (inverted U-shaped) dependencies on both absorbed and unabsorbed slack. Using a longitudinal research design, Tseng, Tansuhaj, Hallagan, and McCullough (2007) also showed that organizational slack had a similarly curvilinear relation with yet another dimension of firm performance—international expansion.

In sum, Bourgeois’s hypothesis that organizational slack is beneficial up to a point (i.e., an inflection point) and then turns negative appears to hold, consistently with a meta-theory of the TMGT effect. That is, while organizational slack is a necessary and good thing, but in high amounts it can undermine rather than foster firm health.

### Illustrations From Additional Research Domains

The examples we described thus far constitute a small sample of manifestations of the TMGT effect, and there are numerous additional illustrations. Here we briefly mention a subset of the relations for which we found theoretical and empirical evidence pointing to the TMGT effect.

With respect to organizational behavior and human resource management, we found evidence that too much organizational identification (Dukerich, Kramer, & Parks, 1998), organizational citizenship behavior (Bergeron, 2007; Bolino & Turnley, 2005; Podsakoff & Mackenzie, 1994), morale (Hirt, Levine, McDonald, Melton, & Martin, 1997), trust and autonomy (Langfred, 2000, 2004), and team and group size (Oliver & Marwell, 1988; Stewart, 2006) can diminish

performance. In the field of entrepreneurship, high levels of prerequisite entrepreneurial traits such as self-efficacy (Baum et al., 2001; Boyd & Vozikis, 1994; Chandler & Jansen, 1992; Zhao, Seibert, & Hills, 2005), creativity, and passion (Cardon, Wincent, Singh, & Drnovsek, 2009: 515) can all lead to unwelcomed consequences not only for the entrepreneurs themselves but also for their ventures (Audia, Locke, & Smith, 2000; Baron, 1998; Brockner, Higgins, & Low, 2004; Cardon et al., 2009; Gist, 1987: 482; Markman, Baron, & Balkin, 2005; Martocchio & Judge, 1997; Vallerand et al., 2003; Whyte, Saks, & Hook, 1997). Finally, in the field of strategic management, we found evidence that adherence to highly recommended strategies, such as vertical integration and outsourcing (Rothaermel, Hitt, & Jobe, 2006), can lead to detrimental outcomes when taken too far. We also found studies that demonstrated that investing in research and development (Jones & Williams, 2000; O'Brien, Drnevich, Crook, & Armstrong, 2010) and, relatedly, offering more (Barnett & Freeman, 2001; Iyengar & Lepper, 2000) and more differentiated products (Thompson, Hamilton, & Rust, 2005) can lead to diminishing financial returns. In addition, we found research that collectively suggests that expanding the composition of boards of directors beyond five to seven members may inhibit corporate governance and performance (Conyon & Peck, 1998; Eisenberg, Sundgren, & Wells, 1998; Golden & Zajac, 2001; Huther, 1997; Mak & Kusnadi, 2005; Westphal, 1998; Yermack, 1996).

In summary, in this section we reviewed evidence in support of the TMGT effect across levels of analysis (e.g., individual and firm level) and subfields of study (i.e., organizational behavior, human resource management, entrepreneurship, and strategic management). Taken together, this evidence suggests that many supposedly positive and linear relations between beneficial antecedents and outcomes become asymptotic and even negative as values or levels of the antecedents increase. In most cases, the inflection point where the relations cease to be linear falls within observable ranges of predictor scores and, hence, does not affect only extreme, unusual, or just a few cases or observations. Thus, the TMGT effect seems to be applicable to a broad range of phenomena in the field of management.

### **Implications for Future Research**

Regardless of area of specialization, a common scientific objective is to develop theories that are as parsimonious, generalizable, and accurate as possible (Einstein, 1934). These guiding principles usually lead to hypothesized relations that take on their simplest possible form: linear and monotonic. This type of theorizing is common at the individual, group, and organizational levels of analysis and permeates the various subfields of management, ranging from organizational behavior and human resource management to entrepreneurship and strategic management (Aguinis, Boyd, et al., 2011). Be it the relation between conscientiousness and individual performance, the relation between new venture planning and venture survival, or the relation between diversification and firm performance, the prevailing theoretical perspective has been that more is better. However, growing bodies of seemingly anomalous empirical evidence contradict this dominant monotonic and linear paradigm that has been established over the past few decades.

The TMGT effect is a meta-theoretical explanation for the countertheoretical and seemingly anomalous findings based on linear and monotonic relations. Like more established principles in

other scientific fields (e.g., Einstein's theory of relativity,  $E = mc^2$ ), the TMGT effect suggests a reality based on curvilinear, rather than linear, relations. Due to the TMGT effect, we propose that positive monotonic relations reach context-specific inflection points after which relations turn asymptotic or even negative, resulting in an overall pattern of curvilinearity. Stated differently, in addition to positive consequences, desirable antecedents may also lead to unanticipated consequences (i.e., neutral or even negative) when those antecedents reach high values or levels. Next, we discuss implications of the TMGT effect for future theory development and theory testing.

### Implications for Theory Development

An important implication of the TMGT effect for theory development concerns the location of context-specific inflection points. A recently published feature topic in *Organizational Research Methods* addressed the topic of theoretical progress in organizational and management research (Edwards, 2010). Collectively, an issue raised by these articles is that, in order to make important advancements, theories should include a greater level of specificity (Edwards & Berry, 2010). Consistent with this notion, an implication of the TMGT effect is that future theory development efforts should predict not only whether  $X$  will be related to  $Y$  but also the precise points on the  $X$  continuum where the  $X$ - $Y$  relation will turn asymptotic and, if applicable, negative. To this end, it may be possible to use various theoretical arguments and past empirical research to posit competing hypotheses regarding the approximate location of these inflection points (Gray & Cooper, 2010).

A second implication of the TMGT effect for theory development concerns a reconsideration and expansion of the role of moderating effects in management research. A moderating, or interaction, effect implies that the relation between two variables depends on the value of a third (i.e., moderator) variable (Aguinis, 2004). As such, moderator variables are indicators of a theory's boundary conditions (i.e., conditions under which the nature of an  $X$ - $Y$  relation changes). In traditional regression terms, a model including a moderator variable is

$$Y = b_0 + b_1X + b_2Z + b_3XZ + e,$$

where the coefficient for the product term between the predictors  $X$  and  $Z$  carries information about the moderating effect of  $Z$  on the  $X$ - $Y$  relation.

The TMGT effect suggests that the conceptualization of moderator variables should be expanded in future theory development efforts in two ways. First, the presence of an inflection point associated with the TMGT effect implies that the relation between a predictor  $X$  and a desirable outcome  $Y$  is expected to change as values of the same predictor  $X$  vary. In other words, variable  $X$  serves as a predictor and also as a moderator of the relation between itself and the outcome  $Y$ . Hence, the nonlinear relations predicted by the TMGT effect can be conceptualized as a special case of the more general moderated relations. The resulting model is

$$Y = b_0 + b_1X + b_2XX + e,$$

or more simply,

$$Y=b_0+b_1X+b_2X^2+e,$$

where the inflection point occurs precisely at the following value along the  $X$  continuum (Weisberg, 2005):  $-b_1 / 2b_2$

Second, the role of moderator variables is also expanded in that they affect not only the location of the inflection point in the relation between  $X$  and  $Y$  but also the slope of this relation to the left and to the right of the inflection point along the  $X$  continuum. These moderating effects can be understood through a combination of Equations 1 and 3, which allows for the estimation of both linear interaction and curvilinear effects (Aguinis, 2004):

$$Y=b_0+b_1X+b_2Z+b_3XZ+b_4X^2+e,$$

A third implication of the TMGT effect also concerns a theory's degree of specificity. Stated differently, future theory development efforts guided by the TMGT effect should specify not only the presence of nonlinear relations and the location of inflection points but also the shape of such relations. We mentioned in the preceding section of our article that once the inflection point is reached, an  $X$ - $Y$  relation will become asymptotic or negative. Given these alternatives, it would be helpful to understand when the former or latter pattern is likely to emerge. To address this issue, we return to the teachings of Aristotle.

In *Nicomachean Ethics* Books I and II, Aristotle (2000a, 2000b) noted that there are three types of antecedents (i.e., predictors) that can potentially lead to positive outcomes: "actions," "passions," and "things good in themselves." He was careful to qualify, however, that the "mean" only applied to the former two. That is, only actions and passions could be problematic when taken too far. Following Aristotle's taxonomy, therefore, we expect to find asymptotic relations for predictors that can be classified as being good in themselves (e.g., general mental ability, wisdom) but inverted U-shaped relations between predictors and outcomes for predictors that can be classified as either actions or passions. The preceding section offers some examples of these types of relations. For example, our review regarding the relation between "actions" such as diversification and its outcomes as well as the relation between "passions" such as conscientiousness and its outcomes have been found to follow an inverted U-shaped pattern.

Equation 4 provides future theory development efforts with a conceptual framework to expand the meaning of moderating effects (i.e.,  $X$  as a moderator of the relation between itself and  $Y$ ), specify the location of the inflection points, and specify the nature of the  $X$ - $Y$  relation to the left and the right of the inflection points, including whether the curvilinear relation is asymptotic (as indicated by a positive sign for  $b_4$ ) or negative (as indicated by a negative sign for  $b_4$ ).

Finally, a consideration of the TMGT effect may lead to the need to rethink the nature of certain constructs. For example, in the case of some of the constructs we discussed earlier, such as initiating structure and conscientiousness, too much of them may actually reflect psychopathology (see Le et al., 2011, for a discussion). Stated differently, excessively high levels of a construct may actually constitute a different construct. Regardless of whether a particular construct is conceptualized differently when it reaches a high level, the TMGT is still useful as a

meta-theoretical principle to describe and explain relations involving that construct and other variables.

### Implications for Theory Testing

As an initial assessment of the TMGT effect, researchers can create graphs such as scatterplots to understand whether a data set may follow an asymptotic or inverted U-shaped pattern. However, more formal tests will often be required. When such formal tests are conducted, it will be necessary to consider issues such as statistical power and effect size, range restriction, and the possible use of advanced data-analytic techniques including meta-analysis and growth modeling. We discuss each of these issues next.

#### *Statistical power and effect size*

We conjecture that many scholars may have identified and actually tested but eventually not reported curvilinear relations as predicted by the TMGT effect because they did not achieve the standard .05 significance level (Aguinis et al., 2010). Interaction effects are notoriously difficult to detect because the methodological and statistical artifacts typically observed in management research decrease statistical power (Aguinis, 2004). Because the coefficient  $b_2$  in Equation 3 is associated with a product term ( $XX$ ), much like the coefficient  $b_3$  is associated with a product term ( $XZ$ ) in Equation 1, tests of hypotheses regarding curvilinear effects as predicted by the TMGT effect are also likely to suffer from low statistical power.

Low statistical power means that even if the curvilinear effect exists in the population, there is a low probability that the effect will be found in any particular sample. Moreover, smaller effect sizes are harder to find compared with larger effects. Consequently, it may be more difficult to achieve sufficient levels of statistical power to test hypotheses regarding asymptotic relations compared with inverted U-shaped relations. Although an asymptotic relation is a smaller effect compared with a U-shaped relation, this does not mean that an asymptotic relation is necessarily less important for science and practice (Aguinis et al., 2010; Cortina & Landis, 2009). For example, failing to recognize an asymptotic relation may lead decision makers to escalate the focal antecedent, which can be costly and time consuming, but in the end the return on this increased investment will not pay off. In other words, not understanding the presence of an asymptotic relation can lead to wasted energy and resources.

Future tests of TMGT effect hypotheses and theories should anticipate and mitigate the detrimental impact of factors known to decrease statistical power and, hence, a researcher's ability to find construct-level nonlinear relations. We refer readers to recent reviews regarding statistical power issues to detect interaction effects in the context of regression (Aguinis & Gottfredson, 2010) and meta-analysis (Aguinis, Gottfredson, & Wright, in press). Recommendations include issues related to research design, measurement, and analysis. For example, measures should be highly reliable and should not be coarse, and after collecting data, researchers should avoid artificially dichotomizing continuous variables.

#### *Restriction of range*



Unfortunately, selection artifacts due mostly to research design and measurement issues can preclude researchers from testing the presence of the TMGT effect in a valid manner. Specifically, in many domains in the organizational sciences there are selection effects that result when samples do not include scores representing the entire continuum of predictor scores (Heckman, 1979). Selection effects are pervasive due to the use of nonexperimental research designs. Indeed, these effects can occur at any level of analysis from the individual level (e.g., a sample of only those individuals whose scores are below a selection cutoff based on “theft proclivity” are included in the sample) to the firm level (e.g., only firms that are successful or are still in business are included in the sample) of analysis. This is an important issue to consider because assessing the presence of the TMGT effect requires a sufficient range of scores.

Figure 1 illustrates the need to include the full range of scores on the predictor variable. With respect to inflection points related to the TMGT effect, Figure 1 shows how researchers are likely to derive conflicting conclusions regarding the  $X$ - $Y$  relation and overlook the presence of the TMGT effect when their data do not include the entire range of predictor scores. For example, if a study includes predictor scores restricted to the range illustrated in Zone 2, the conclusion will be that there is a positive relation between  $X$  and  $Y$ , whereas a second study including the range of scores in Zone 3 would conclude that the relation is close to zero. Including the full range of scores (i.e., Zones 1 through 4), however, would allow researchers to conduct a valid assessment of the presence of the TMGT effect and isolate the inflection point where the  $X$ - $Y$  relation ceases to be linear. Note, however, that even if a study includes the full range of scores, failing to fit models that include nonlinear components, as described in the Implications for Theory Development section, could lead to the erroneous conclusion that that the data are best described by a positive and linear trend.

A common solution for addressing range restriction due to selection mechanisms is to apply statistical corrections that allow for an estimation of what the  $X$ - $Y$  relations would be if the full range of  $X$  scores was available (Heckman, 1979; Pearson, 1903; Thorndike, 1949). Although it would seem that corrections for range restriction should allow researchers to test for the presence of the TMGT effect, these correction procedures ironically render such tests invalid because they assume a linear  $X$ - $Y$  relation (Hunter, Schmidt, & Le, 2006). That is, using the available range restriction statistical correction procedures will actually prevent researchers from finding the inflection points (i.e., nonlinear relations) associated with the TMGT effect (Linn, Harnisch, & Dunbar, 1981; Sturman, 2003).

A literature review conducted by Aguinis, Pierce, Bosco, and Muslin led to the conclusion that there is an “unbalanced coverage of design, measurement, and analysis topics” and that “more attention is needed regarding the development of new as well as the improvement of existing research designs” (2009: 106). Following their conclusion, we suggest that improvements in data-analytic tools alone are not likely to lead to valid empirical tests of the TMGT effect in specific research domains. Rather, we propose two solutions that include a combination of research design, measurement, and data analysis, which we describe next.

### ***Advanced meta-analytic methods***

Meta-analysis has become the methodological gold standard for conducting literature reviews in the organizational sciences (Aguinis, Dalton, et al., 2011; Rousseau et al., 2008). Scholars give far more credence to meta-analytic results than they do to single-study findings—and with good reason. Meta-analytic techniques allow for the estimation of construct-level effect sizes through greater statistical power and the ability to correct for a number of methodological and statistical artifacts such as sampling and measurement error.

Despite the powerful influence that meta-analytic methods and findings have in organizational science research, the technique has far more potential than is currently being realized. Most meta-analysts report bivariate correlations computed under the usual assumption of linearity (Aguinis, Dalton, et al., 2011; Rousseau et al., 2008). However, meta-analysis can be used to model curvilinear relations and, hence, test hypotheses and theories based on the TMGT effect. For example, Sturman (2003) hypothesized that temporal variables (i.e., work experience and time on the job) would positively predict job performance up to a point of inflection after which the relation would turn negative. Sturman's meta-analytic approach included the following three components. First, he did not make any corrections for restriction of range because he presumed curvilinear rather than linear relations. Second, he estimated, but remained skeptical of, a linear model, even though the relation was statistically significant. Third, based on this skepticism, he examined the data more closely. As a consequence of this examination, he found his data followed an inverted U-shaped pattern similar to that shown in Figure 1. That is, he found positive correlations at low levels of the temporal variables (Thesis A, above), zero-equivalent correlations relation at the middle range (Thesis B, above), and negative correlations at high levels (Thesis C, above), thereby identifying the location of the inflection point along the *X*-variable continuum.

### ***Advanced growth-modeling methods***

Reexaminations of accepted relations with longitudinal methods have challenged some accepted relations in organizational science theories (e.g., Ilies, Scott, & Judge, 2006; Vancouver, Thompson, & Williams, 2001) and suggest that traditional cross-sectional research designs and subsequent data-analytic approaches may be inadequate in many contexts. As compared with cross-sectional designs that can test static relations only at single points in time, longitudinal designs and analytic techniques such as growth modeling enable researchers to explicitly model dynamic relations (i.e., how changes in *X* relate to changes in *Y* over time; Ployhart & Vandenberg, 2010). The TMGT effect emerges over time. Hence, these techniques are suitable for testing TMGT effect hypotheses.

Researchers wishing to explore the TMGT effect using growth-modeling techniques should note two qualifications made by Ployhart and Vandenberg (2010). First, identification and characterization of curvilinear relations with growth models requires careful planning of and theoretical bases for the number and intervals between the observations made over time. Though detecting a curvilinear pattern requires a minimum of three observations (Chan, 1998), accurately characterizing growth curves may require more. Second, researchers have at least three growth-modeling techniques from which to choose: (1) latent growth modeling; (2) random coefficients modeling; and (3) latent class growth analysis (LCGA), also known as latent class

growth modeling or mixture modeling (Muthén, 2001). Each of these techniques is better suited for certain types of tests and data than others. For instance, LCGA has specific utility for identifying the categorical moderators (i.e., subpopulations) that determine the location of inflection points.

### **Implications for Practice**

As illustrated in the opening vignettes, well-intended and seemingly scientifically supported organizational interventions can lead to unanticipated negative organizational consequences when taken too far. If, instead, managers and other organizational decision makers limit the application of their interventions based on an understanding of the TMGT effect, they may avoid such unexpected negative outcomes. To demonstrate the practical applicability of the TMGT effect, we now reinterpret and make sense of our opening vignettes using the TMGT effect as a meta-theoretical principle.

In the first vignette, William Hapgood presumed that a fully democratized workforce would maximize outcomes in terms of firm performance and employee well-being. Consequently, he implemented a series of changes that gave employees at the Columbia Preserve Company increasingly more autonomy. At first, his initiatives stimulated unprecedented growth and profitability. Persisting in his pursuit of a fully democratized workplace, however, ultimately led to an uprising that nearly destroyed the firm. If Hapgood had understood that too much democratization, and presumably, responsibility, could lead to decreased instead of increased employee satisfaction and firm performance (e.g., Logan & Ganster, 2007), he may have limited the extent of his initiative. That is, Hapgood may have understood the location of the inflection point in the relation between democratization and organizational outcomes and not pushed beyond it.

In the second vignette, Nortel Networks executed an acquisition strategy on the presumption that being a fully integrated network-solution provider would lead to improved firm performance. By facilitating rapid development of new products and integrated solutions, this strategy allowed Nortel to be a leader in the technology race during the late 1990s. Diversifying too much, however, strained the company's resources and made it vulnerable to market instability, as evidenced by its demise. If executives had anticipated the presence of the inflection point in the diversification–performance relation, they could have worked to identify the proper balance between being too specialized and too diversified to maximize long-term performance.

Finally, in the third opening vignette, People Express had to grow to survive when it began doing business with only three aircraft in 1980. Presuming that faster growth was better, the company's leadership orchestrated unprecedented expansion that took it from one of the smallest to the fifth largest domestic carrier in the United States in just six years. Unfortunately, the plan exceeded what the firm and the market could bear. In contrast, a strategy informed by the TMGT effect and an anticipation of an inflection point in the relation between growth rate and performance may have allowed People Express to simultaneously obtain both the economies of scale and market base it needed to survive and thrive.

### **Conclusion**

We have proposed the TMGT effect as a meta-theoretical principle that allows us to account for and make sense of an increasing body of apparently paradoxical, countertheoretical, and seemingly anomalous empirical findings across management subfields. As such, it provides an answer to a call for improved theories that can explain phenomena at different levels of analysis, thereby possibly mitigating the increased fragmentation of the field of management (Aguinis, Boyd, et al., 2011). The TMGT effect suggests that management researchers should hypothesize and test the possibility that relatively high levels of otherwise beneficial antecedents may lead to unexpected and undesired outcomes. Moreover, it serves as an admonition to practitioners that escalation of an initially positive action or organizational intervention may actually lead to negative results. We hope the consideration of the TMGT effect will open doors to novel and groundbreaking theories and applications.

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