BOUNCING BACK AND ADAPTING TO CHANGE:
MANAGERS' RESILIENCE, SKILLS AND PHARMACEUTICAL SALES TEAM PERFORMANCE

by

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ABSTRACT

This thesis explored the relationship between the personal resilience of pharmaceutical sales managers (District Managers), manager skills and the sales performance of their teams of sales representatives. The variables included 2009 and 2010 quarterly financial performance against sales targets for each sales district, manager performance against specific objectives, and annual skills assessment ratings and performance review ratings, as well as assessed manager resilience from February, 2009 using the Personal Resilience® Questionnaire. The data were analyzed using four statistical methods: Internal Reliability Analysis, Exploratory Factor Analysis, Structural Equation Modeling and Correlation Analysis. The analysis demonstrated a small (2%) but statistically significant relationship between manager resilience, which was fully mediated by manager skills, and sales team performance. This relationship was interrupted by a major organizational realignment and restructuring, and was reestablished after three quarters of relative organizational stability. Implications and future research possibilities are discussed.

Chapter 1

INTRODUCTION

Problem Statement and Background

The research-based pharmaceutical industry in the United States is changing. Historically an industry where new product development led to high profit margins and vice versa, the industry has come under increasing pressure from payors to decrease the unit price of drugs and to demonstrate differentiated benefit; competitors, especially from generic pharmaceutical manufacturers; regulators, especially regarding marketing practices; providers, who increasingly need and deserve technical information and education; and shareholders, who expect high returns to be maintained. In addition, patients in general have historically demonstrated variable, if not poor, adherence to pharmaceutical treatments as prescribed. That is, often they either have not filled their prescriptions or when they did, they did not take them for the duration prescribed. At the same time, the introduction of innovative new medicines, especially those with a broad target population, has slowed. None of these pressures has been illegitimate, unexpected or unethical. Among those who have felt the pressure have been the sales professionals in these companies. Increasingly, the obstacles to driving sales have become more daunting, while the expectations from shareholders remain the same. Research-based pharmaceutical companies have introduced fewer new drugs to market, under increasingly competitive and regulated conditions, with no relief from shareholders. The sales force has been at the center of this increasing pressure.

The research for this thesis was focused on how some research-based pharmaceutical sales managers, in the face of this mounting pressure and adversity, seemed to maintain or even increase the performance of their selling teams, while others did not. Specifically, this research sought to determine if personal resilience was a contributing factor to success as a sales manager in the research-based pharmaceutical sales industry in the United States, and how a sales managerôs personal resilience impacted sales performance during a period of significant organizational change.

The company that participated in this thesis, hereafter and in references referred to as ñCompanyò, is a global research-based pharmaceutical company with significant operations and sales in the United States. In order to protect competitive information and ensure the privacy and confidentiality of the data, the identity of the Company has been withheld, and the specific definitions of performance measures and skills assessed have been modified, though the fundamental meaning has been preserved. This Company conducted skills assessments of all sales personnel on an annual basis in July, and collected quarterly performance data against specific sales targets, as well as against more subjective attributes such as manager capabilities. Formal performance reviews were conducted annually in November. In January and February, 2009, most of the U.S. sales managers at all levels in the Company took a 3rd party, online assessment of their personal resilience which will be discussed in later chapters. This thesis will attempt to use all of this data to understand how the personal resilience of sales managers, as measured by this assessment, impacted sales performance, as well as to understand the relationship between resilience and manager skills in driving sales performance, specifically during large scale organizational restructuring. If we can isolate the specific resilience factors that drive sales performance, we can develop specific training and development interventions for sales managers to maximize their potential for success.

Pharmaceutical Industry Overview

In 2010, prescription drug sales in the United States exceeded $307 billion, making up 94% of total drug sales. Patented drug sales exceeded $233 billion, which was over 75% of prescription patented and generic drug sales and 71% of total drug sales, which includes over-the-counter drugs. The United States is the largest pharmaceutical market in the world, with prescription drug sales expected to exceed $331 billion by the end of 2015. (Business Monitor International Ltd., 2011) The largest entities in the industry are: research-based companies, who generally discover, develop and commercialize innovative new drugs; biotechnology companies, who are generally smaller and focused on specific biologic or research technologies; and generic manufacturers, who generally manufacture commodity versions of drugs once their patents expire. In addition, the industry is also comprised of suppliers (e.g., bulk compound manufacturers), small research companies and institutions, outsource providers (e.g., clinical research organizations and contract sales organizations) and various consultants, marketing companies and other vendors. Large pharmaceutical companies may have any combination of research-based, biotech or generic divisions, may extensively or narrowly outsource specific functions or may seek long-term partnerships with small research entities or be strictly opportunistic. In addition, pharmaceutical companies, large and small, may partner on the development and launch of a new product, taking advantage of mutual research or commercial strengths in a given therapeutic area. (Campbell, 2005)

Despite years of growth within the pharmaceuticals industry in the United States, the near-term outlook, especially for pharmaceutical salespeople of patented drugs, is challenging if not bleak. Sales of patented drugs are expected to decline to $226 billion in 2014, a 3% decrease due largely to the whole-scale expiration of patents in 2010-2015. (Business Monitor International Ltd., 2011) This decline in revenue will be the first amongst members of the Pharmaceutical Research and Manufacturers of America (PhRMA), the largest and most influential professional association within the U.S. pharmaceutical industry, since the organization began reporting data in 1975. (The Pharmaceutical Research and Manufacturers Association, 2011) Other key challenges to sales are linked to macroeconomic and political trends in the United States. These include:

Access and affordability. In 2005, per capita annual spending on pharmaceuticals in the United States was $790 compared to $599 for the next highest nation (Canada). In most countries, people with low incomes were more likely to use a prescription drug than people with high incomes, because in general, low income people were generally less healthy, and in most countries, had access to nationalized health care systems. However, in the United States, they were equally likely, indicating that either high income Americans were using prescription drugs at a significantly higher rate than their peers in other countries, or low income Americans were not able to access prescription drugs at an equitable rate. Indeed, a 2007 survey indicated that over 23% of Americans, and 34% of low-income Americans, reported not filling a prescription or skipping a dose in the last 12 months due to cost, compared to 13.4% of Australians, the second highest in the survey. (Morgan & Kennedy, 2010) In 2009, the U.S. Census Bureau reported that 50.7 million Americans (16.7%) had no health insurance. (DeNavas-Walt, Proctor, & Smith, 2010) Other reports estimated the number of uninsured at 42 million people. (Business Monitor International Ltd., 2011) An analysis of the of 200 best-selling drugs in France, Germany, Italy, Spain, United Kingdom, Japan and the United States revealed that pharmaceutical prices in the UK averaged 56% of U.S. prices; prices in Japan averaged 78%. (Grubert & Sullivan, 2010) In summary, pharmaceutical prices in the U.S. have historically been generally high, and a relatively high percentage of people lacked the resources to buy them.

The Affordable Care Act, passed in 2010 and due to take full effect in 2014, should improve access for low-income Americans. Under this act, Americans will be required to obtain health insurance, and insurers will no longer be allowed to exclude people with pre-existing conditions, capriciously drop people from coverage or charge those customers higher premiums. With 42-51 million Americans experiencing improved access, this should benefit overall revenue for pharmaceutical companies. However, the net effect to pharmaceutical companies will likely be increased pressure from the largest payors on pharmaceutical companies to reduce their prices, and will likely result in increased usage of generic drugs over branded pharmaceuticals. (Business Monitor International Ltd., 2011)

Adherence. The term óadherenceô refers to patient adherence to the prescribed drug regimen. In 2009, 6.3% of commercial health plan patients abandoned their new prescriptions at the pharmacy. They did not pick them up and thus the revenue was not realized. For branded pharmaceuticals, the number was 8.6%, a 68% increase since 2006. This rate was consistent across both temporary and chronic (e.g., diabetes) disease states, and was likely due to a combination of the general economic conditions in the U.S., increased insurance deductibles and co-payments for insured patients, and high overall drug costs for the uninsured. In 2010, employee costs for health insurance rose an average of 6.9%. (Business Monitor International Ltd., 2011; Mercer, LLC, 2010)

Generic intrusion and patent expirations. The market share of generic prescription drugs, as a percentage of the prescription drug market, grew to 24% in 2010, and is expected to grow to more than 30% by the end of 2015. This growth was due to a number of factors including the expiration of the patents on a large number of blockbuster patented drugs, the increased confidence of healthcare providers and the public in the safety and efficacy of generic drugs, the emergence of low-cost prescription drug programs amongst very large payors (such as Wal-Mart and Costco), and the significantly lower price of generics relative to patented drugs. (Business Monitor International Ltd., 2011)

Regulatory and payor pressure. Under the Affordable Care Act, insurers will be prohibited from both excluding customers with pre-existing conditions and from charging those customers higher premiums. These added costs will likely drive insurers to intervene even more in prescription decisions through their formularies (the list of preferred drugs in the plan with lower co-pays). That is, they will likely create incentives for prescribers and patients to favor the much cheaper generic or over-the-counter drugs, and disincentives to use branded, patented drugs. (Business Monitor International Ltd., 2011)

In summary, patent expirations, increased price pressure from payors and government, and changes in industry structure due to the Affordable Care Act are generating extraordinary change and putting extreme pressure on research-based pharmaceutical sales forces to deliver increased revenue in the face of unprecedented challenges.

Pharmaceutical Sales in the United States

Approximately 28% of the physicians in the United States write about 80% of the prescriptions. These ñhigh prescribersò are therefore targeted by pharmaceutical companies, traditionally through a large sales force of pharmaceutical sales representatives. As of 2004, approximately 100,000 pharmaceutical sales representatives were calling on approximately 250,000 physicians out of 875,000 physicians practicing in the United States. (Campbell, 2005) Prescriber data and other healthcare delivery data are collected by independent data and information services companies and sold to payors (e.g., governments and health insurance companies), providers (e.g., physicians and hospitals) and pharmaceutical companies. These customers use this data for a myriad of analyses, including understanding healthcare trends and emerging healthcare needs. The largest of these companies is IMS Health, Inc., which tracks more than 80% of global pharmaceutical sales activity. (IMS Health, Inc., 2011)

The cornerstone of the pharmaceutical sales process is the sales call, known as a ñdetailò within the pharmaceutical industry. These details are not sales calls in the general sense. No product is actually sold and no order is actually taken. Rather, the objective is to provide the prescriber with sufficient information and/or promotional material (e.g., patient education materials and samples) so that at some point in the future, the prescriber will independently decide to write a prescription for an appropriate patient. This activity is highly regulated, both by the U.S. government and by the industry itself. For example, sales representatives may not discuss any usage of pharmaceuticals that have not been specifically approved by the Food and Drug Administration (FDA), known as ñoff-labelò usage, even if compelling clinical data exist. (Campbell, 2005) In 2009, in the face of growing pressure from the public, government, and the media, the Pharmaceutical Research and Manufacturers of America (PhRMA) voluntarily imposed unprecedented restrictions on its members regarding virtually every aspect of sales activity not directly related to the sales detail, including entertainment, meals, and promotional materials, such as branded pens and calendars, which in the past were provided to healthcare professionals, effectively eliminating many of these perks in all but the most defined and transparent of cases. (The Pharmaceutical Research and Manufacturers of America (PhRMA); Campbell, 2005) While these measures remove some of the tools within a sales representativeôs arsenal, they also serve to bring into sharp focus the primary purpose of pharmaceutical sales, which is to educate and provide healthcare providers with useful, accurate and approved information and programs which can improve the health of patients. In addition, given the pressures on the industry previously discussed, this refocusing encourages pharmaceutical companies, through their sales representatives, to better understand and articulate to payors, government regulators, and healthcare providers the unique benefits to patient health, and overall healthcare costs, that their branded, and slightly more expensive, pharmaceuticals can deliver to appropriate patients and patient populations.

Pharmaceutical sales organizations are generally organized into national selling teams. These teams focus on selling a specific mix of products to a specific market segment. These segments vary company-to-company, but in general break down as follows: Primary Care (e.g., family practice physicians, pediatric physicians, internal medicine physicians and OB/GYNs), Specialty Care (e.g., specialists such as psychiatrist, pulmonologist, oncologists and cardiologists), institutions/hospitals and Managed Markets (e.g., large payors such as government and insurance companies, and large purchasers of pharmaceuticals, such as Wal-Mart). Managed Market sales teams are generally focused on working with payors to establish contracts and ensure products are made available to patients through these channels. The other selling teams generally focus on influencing prescribers through sales details. (Campbell, 2005)

Sales representatives sell in specific geographic territories. These territories cluster together to form districts and are led by a District Manager (DM). Typically, a DM will have on average 10 sales reps on his/her team. (Campbell, 2005,

p. 161) Districts cluster together to form regions and are led by a Regional Director (RD). These regions make up the national team under the direction of a National Director (ND) and there is one ND for each selling team. Each territory, district, region and national selling team is incentivized through the use of sales targets and sales incentive compensation plans. These targets may be any combination of market share, market share growth, revenue, revenue growth, total scripts, total scripts growth or any other measureable metric. Generally, each objective is given a target goal and a weight. For example, a DM may be on a selling team that is participating in the launch of a new blockbuster drug. They may have a market share growth target for that drug that is weighted at 65%. The other, more mature drugs that they represent may carry total scripts targets that are weighted at 20%, 10% and 5% respectively. Generally the specific metrics and weightings are the same across the national selling team, but will likely vary <u>between</u> selling teams, which generally sell a different mix of products to a different mix of market segments. Typically, a DM or RD may vary <u>the targets</u> slightly amongst his or her direct reports to account for variations within the region or district (e.g., to account for a unique challenge in one territory), as long as the rolled up targets remain the same. Based on these targets, prescriber behaviors and other internal and external nuances within each territory, district or region, managers at each level develop tailored sales strategies to maximize the likelihood that the sales force will meet or exceed its objectives. The role of the DM, RD and ND is to develop the sales strategy and plans, set targets, monitor performance against those targets and above all provide ongoing, hands-on coaching and support to their teams. (Campbell, 2005) At the Company participating in this study, interaction between the

DM and individual sales reps is generally limited to an intense six hours every two weeks. These interactions almost always include a óride-alongô during which the DM generally observes and provides coaching regarding account strategy, pre-sales call preparation, sales call execution and post-sales call activities.

<u>The Company Involved in this Study</u>

As mentioned previously, the Company involved is a global research-based pharmaceutical company with significant operations in the United States. While the Company expressed a desire to remain anonymous, the level of cooperation, access and transparency was notable. The main constraint imposed by the Company on the researcher was to not distract the sales force. Therefore the study was limited to a ólook-backô analysis of existing data, with access to key people (not directly involved in field sales activities) to help understand the business context surrounding sales operations and key events that occurred during the timeframe the data were originally collected.

In January, 2010, the sales force reorganized. Reorganization and realignment is not unusual. Most pharmaceutical companies realign their sales forces annually when new product strategies are implemented with new performance metrics and targets, and realign as needed when a new product is launched or a patent expires. In the case of this Company, effective January 1, 2010, in addition to the normal resetting of strategies, performance metrics and targets, two of the smaller national selling teams were folded into the remaining teams and, more importantly for this study, a moderate downsizing was implemented and territories were realigned, resulting in changes to account assignments. That is, sales reps were not calling on all of the same doctors as in 2009, and district sales teams experienced turnover and/or realignment of the sales reps to different District Managers (DMs) as high as 50%. Thus the organization experienced significant disruptive change. Were these reconstituted teams, led by their DMs, able to bounce back? And how long did it take after the change for the DMsô resilience to show up in tangible sales performance?

Study Purpose and Significance

The purpose of this study was to determine if District Manager (DM) resilience, as measured by the Personal Resilience® Questionnaire (PRQ) (Conner Partners, 1994), a commercially available 3rd party assessment, had any positive effect on team performance of sales professionals, if this effect was interrupted by large scale organizational change, and if so, how long it took to reestablish the positive effect.

As will be noted in Chapter 2, most of the research done to date has focused on the impact of executivesô personal resilience on organizational outcomes, the correlation between resilience and transformational leadership and the impact of the resilience of individual employees on employee turnover, satisfaction or their individual performance. Very little research has focused on the resilience of mid-level or frontline managers, who generally have very little input to organizational change and generally must work through employees to affect organizational outcomes even during times of change. Little is known about how their own resilience influences the performance of their employees or the performance of a complex value chain comprised of sales representatives, customer, key influencers and end users, to achieve organizational outcomes (i.e., the achievement of sales targets). Moreover, relatively little research has been done to understand the impact of manager resilience on organizational outcomes during a large scale organizational change. If one or more characteristics could be found to statistically correlate to measureable, financial outcomes (e.g., sales productivity), an organization could seek to develop those characteristics in DMs through training and other learning interventions. In addition, the research contained herein was different than most prior research in that it looked beyond leadership attributes and behaviors and focused on financial sales performance, a dependent variable that is purely objective. While the correlation with subjective ñratingsò (e.g., performance review ratings) was examined, the main focus of this thesis was the impact of DM resilience on top-line sales team delivery against target during change.

Key Definitions and Terms

***Resilience*:** Adapted from the various constructs contained herein, this thesis used the following definition of resilience: *the ability to adapt to or recover from significant change and remain productive.* The concept of resilience and various constructs to explain it are further explored in Chapter 2 of this thesis.

Sales Performance (financial): This metric refers to performance against specific sales targets (e.g., sales volume, percent growth, percent market share, or market share growth), expressed as a percentage. Generally, a pharmaceutical companyǿs senior sales and marketing leadership sets one or more objectives for each product a selling team sells, as well as set the weight each objective has in the overall aggregate target. This formula is generally the same for every region, district and territory <u>for that selling team</u>. Specific targets may vary for each region, district and territory based on factors such as prescribing history, access to health care professionals, local regulations, and sales force turnover. These targets may be adjusted as appropriate throughout the year. Different national selling teams have different market segments and/or products, and therefore have different sales strategies, metrics and targets. The net effect is that District Managers (DMs) and sales reps adjust their sales plans and strategies locally to maximize performance, within very strict ethical and regulatory requirements, against target and thereby maximize sales incentive compensation. (Campbell, 2005) The Company in this study divides each districtǿs sales performance, measured as a percent of target achieved, by the sales performance of the national selling team, which is also measured as percent of target achieved across the team nationally. This effectively removes the influence positive or negative of national events, such as the release of a positive or negative clinical study involving one of the Companyǿs or a competitorǿs products, which do not reflect anything a DM actually did locally to achieve sales targets. The specific calculation method, though similar to the one explained by Campbell (2005, pp. 166-168), is proprietary and not further detailed in this thesis. In this thesis, this final performance ratio is referred to as *Sales Performance (financial).*

Sales Performance (managerial): This metric is a quarterly rating, completed by a RD, which assesses DM performance against specific individual targets, such as *progress against specific development objectives*, and DM performance against general standards, such as *performance against leadership competencies*. *Sales Performance (managerial)* is expressed as a percentage versus target.

Performance Rating: A formal performance review, completed annually by a RD, assesses overall DM performance for the year, including sales performance and achievement against other objectives, such as special projects. Performance ratings of DMs are typically calibrated across regions, super-regions, sometimes called óAreasô, and nationally within the particular selling team to ensure consistent grading. The Company uses the following five-level rating scheme (Company, 2007):

- *Distinguished*: Level and/or quality of output have contributed to transformation and/or breakthrough results in team or business unit performance in the last 12 months. Performance significantly exceeds agreed objective requirements and standards, resulting in exceptional contribution and impact to the team, business unit or wider organization.
- *Exceeded*: Level and/or quality of output have contributed to a positive step change in team or business unit performance in the last 12 months. Performance exceeds the agreed objective requirements and standards.

- *Met*: Level and/or quality of output have contributed to incremental improvements in team or business unit performance in the last 12 months. Performance consistently meets agreed objective requirements and standards.
- *Partially Met*: Level and/or quality of output have remained constant, maintaining the status quo in team or business unit performance in the last 12 months. Performance mostly or partially meets agreed objective requirements and standards.
- *Unacceptable*: Level and/or quality of output has reduced or negatively impacted team or business unit performance in the last 12 months. Performance consistently fails to meet agreed objective requirements and standards, and action is required to improve within an agreed time period.

Sales Manager Skills: The Company assesses DMs in July of each year on the skills listed in Table 1. Also listed in Table 1 is the rating scale used. This assessment is done by the associated RD and calibrated across other regions within the selling team to ensure consistent grading.

Table 1. District Manager Skills Assessment Factors. (Company, 2011)

District Manager skills
Business Acumen: Navigates self and others through a constantly changing healthcare environment; Uses sound judgment; Thinks through the impact of actions.
Delivering Results: Establishes clear, specific, and challenging (but achievable) goals; Readily accepts challenges; Develops innovative solutions.
Leading & Inspiring a Team: Inspires team to achieve their sales targets; Role models behavior; Collaborates with others; Learns and innovates to deliver strong results.
Building Accountability: Sets clear behavioral expectations & standards; Takes decisive action to address performance issues.
Developing Talent: Demonstrates commitment to employee engagement and to professional development, learning and advancement of team members to deliver current results and create a future talent pool.
Rating Scale
Inadequate: Fails to meet the expected job standards.
Adequate: Adequately fulfills expectations
Satisfactory: Consistently fulfills essential expectations, and occasionally exceeds them
Proficient: Frequently exceeds expectations; performs well above satisfactory
Excellent: Consistently exceeds expectations in all essential areas; makes significant contributions

Research Questions, Hypotheses and Exploratory Questions

Research question: What is the relationship between the personal resilience of District Managers (DMs), as measured by the Personal Resilience® Questionnaire, and quantifiable sales results of their teams?

Hypotheses: The initial model and hypotheses are illustrated in Figure 1.

Hypothesis #1: The resilience of DMs has a positive effect on assessed managerial skills.

Hypothesis #2: The managerial skills of DMs have a direct positive effect on the sales performance of their teams.

Hypothesis #3: The managerial skills of DMs mediate the effect their resilience has on the sales performance of their teams.

Hypothesis #4: The resilience of DMs has a direct positive effect on the sales performance of their teams.

Exploratory questions:

- *Exploratory question #1:* Are DM skills and DM resilience the same thing?
- *Exploratory question #2:* Do subjective DM performance reviews, specifically Annual Performance Reviews and the Managerial (leadership) component of sales incentive process, correlate to sales performance?
- *Exploratory question #3:* How long after a disruptive change does it take to reestablish the positive effect high DM resilience has, working though a value delivery system, on organizational outcomes (e.g., the achievement of sales targets)?

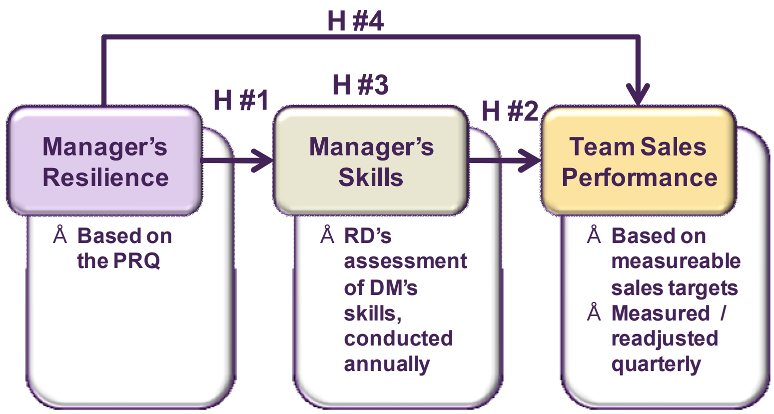

Figure 1. **Initial Research Conceptual Model**

Assumptions and Limitations

The Personal Resilience® Questionnaire (PRQ) is a self-administered online assessment. That is, respondents are asked a series of questions about themselves, and they answer on a 5-point Likert scale what they believe about themselves relative to that question. Therefore, the researcher assumes that managers were both sufficiently self-aware and trust the confidentiality of the PRQ administration enough to answer accurately and honestly about themselves. In addition, the specific and immediate conditions and circumstances under which each manager responded to the PRQ varied by individual. Some were likely more rushed or stressed than others when they actually took the online assessment. This may have skewed their self-perceptions in different directions and to varying degrees. But the assumption was that across the sample, the PRQ was an accurate measurement of District Manager (DM) resilience.

Another assumption was that the organization was relatively stable in the third and fourth quarters of 2009, and that the relationship between District Manager (DM) skills and resilience, and sales performance in the last half of 2009 was a representative reflection of how DM resilience affects sales performance normally and under steady state conditions. In addition, it was assumed that the changes made in January 2010 were representative of significant change (that is, this change was of sufficient magnitude and scope to be characterized as ódisruptiveô to normal organizational rhythm and functioning) and that no other changes of similar magnitude or scope occurred in 2010.

Other factors, unrelated to resilience, likely contributed significantly to sales performance. For example, Pharmacy Benefit Managers (PBMs) are large companies that manage the drug plan and formulary as part of a health insurance plan. If a PBM changed the formulary, or if legislation in a state changed, or if a competitor launched a similar drug, this may have had a positive or negative impact on sales performance unrelated to the DMôs resilience, skills or behaviors of the DM. Other examples would be significant changes to the product portfolio, changes to territory/district structure, significant turnover of sales reps, changes to sales call processes or strategies or better or lesser support and coaching from peers, Regional Directors (RDs) or their sales reps. While many of these factors were realized in 2010, none of them were explicitly measured or assessed individually, and therefore their impact could not be isolated.

The researcher did not have the opportunity to investigate cause-and-effect (e.g., why some DMs were more resilient or got better results, or how resilience and/or skills actually translated into results.) The Company agreed to participate and provide access to data provided the sales force was in no way disrupted or distracted from the task of selling. Moreover, the approach to de-identifying data rendered follow-up impossible.

The researcher did not analyze sales rep performance, resilience, skills or turnover. Clearly, a DM with a team of experienced ósuperstarsô would likely have had superior performance, despite having low resilience and / or poor skills, as opposed to a highly resilient and skilled DM with a new, inexperienced or poorly performing team of sales reps. The latter would likely have struggled to meet or exceed targets. This relationship was not analyzed due to the lack of PRQ, skills or performance data at the sales rep level, as well as the lack of time and resources to undertake research of such enormous scope. Researching sales reps would, however, be an extremely rich and enlightening topic for future research.

The DM must bring his/her resilience and skills to bear to deliver superior sales performance through interactions with a team of sales representatives, who then interact with HCPs, who then interact with patients, who finally get their prescriptions filled. This pathway that begins with a DMös resilience and skills, and ultimately results in superior sales performance is long and tenuous at best, with significant distracters along the way. The focus of this thesis was to examine the extent to which a DMös personal resilience, much of which reveals itself to others as ógood attitudeö, ófocused like a laser beamô and óa good person to be aroundö, transferred to each sales rep in the six hours every two weeks they spend together, carried over into the subsequent sales calls with Healthcare Professionals (HCPs) to such an extent that the

HCPs were inspired to consider prescribing the drug detailed by the sales rep. Therefore the expectation was that the measured personal resilience of a DM would ultimately have a positive, but small impact on sales performance.

Performance reviews and skills assessments are, in all but a very few companies, by their nature subjective. For example, rarely are they based on objective άtestsô. In the case of the Company in this study, performance reviews, the managerial sales performance portion of their incentive program and the skills assessments were conducted by a RD, in consultation with the associated DM, peers, and superiors. These evaluations were calibrated across the region and/or national selling team to ensure consistency of grading. Great care was taken to be fair and accurate, but it is nonetheless technically subjective, subject to a number of factors including grader bias and preferences (e.g., fundamental attribution error, recency effect, or anchoring), grader experience, and understanding of the calibration process. In addition, performance against sales targets across selling teams or regions may not always have reflected the actual performance of individual DMs. That is, despite the considerable effort expended in determining metrics, setting appropriate targets, calibrating performance and skills ratings, and adjusting targets as the business environment evolves, inevitably some managers had easier targets than others, thereby resulting in artificially superior or inferior performance. The assumption was that this was not the norm, and that given the large data sample, these isolated cases would not skew the true nature of the relationships between resilience, skills and sales performance.

This research did not constitute a psychometric validity study under the U.S. Equal Employment Opportunity Commission (EEOC) guidelines, and <u>should not</u>

be used in any employment action (e.g., recruitment, selection, hiring, promotion, or termination) without further validity and disparate impact testing per EEOC best practice or other national legal guidance, as appropriate. In addition, a more comprehensive study to determine the degree to which the factors other than resilience which drive performance in a particular organization should be conducted before resilience could be considered for use in employment actions. The researcher, Thesis Advisor, readers and reviewers, the University of Delaware, the Company involved in this study and the publishers of this thesis assume no responsibility or liability, in whole or in part, for misuse of this study in any employment action by any employer or organization. The EEOC best practices may be found at (http://www.eeoc.gov/policy/docs/factemployment_procedures.html).

Outline of the Paper

Chapter 1 provided an overview of the problem to be studied, background information on the Pharmaceutical industry and sales in the United States, the purpose and significance of the study, key definitions, the research questions, hypotheses and exploratory questions and assumptions and limitations of the study. Chapter 2 includes a literature search of relevant articles and research regarding constructs of resilience and resilience measurement instruments in a business context, as well as a synthesis of these constructs. Chapter 3 details the research design. Chapter 4 discusses and analyzes the findings of the statistical methods employed. Lastly, Chapter 5 integrates the findings from Chapter 4 with information from Chapters 1 and 2 into a more holistic discussion of the research results, and suggests potential areas of future research.

Chapter 2

LITERATURE SEARCH

Literature Search Approach

The main focus of this thesis and the associated literature search was on business applications of resilience. It was, however, unavoidable and indeed beneficial to consider perspectives from the fields of education, psychology, psychiatry and sociology, provided the conceptual connection back to a business environment was clear to the researcher.

The literature search was conducted using predominantly the University of Delaware online library databases and e-Journals. References and documents which were eventually included herein also provided additional resources from their respective bibliographies. Lastly, the researcher used research material provided by Resilience Alliance and reference material in his possession.

The online databases indicated in Table 2 were selected because they contain a large number of journal references relevant to the general topic and had the capability to apply such search criteria as ñpeer-reviewed onlyò, keyword search and search within specified publication timeframes.

Table 2. Title / Abstract Keyword Search Results.

Search terms (title & abstract)	*ABI/INFORM*	*Academic OneFile*	*Business Source Premier*	*Expanded Academic ASAP Plus*	*ProQuest Dissertations & Theses*	*PsycINFO*	*Total # of hits*
"personal resilience"	4	14	2	9	**31**	**34**	**94**
"personal resilience"+"proactive work behavior"	0	0	0	0	0	0	**0**
"personal resilience"+"productivity"	0	0	0	0	0	0	**0**
"personal resilience"+"sales"	0	0	0	0	0	0	**0**
"personal resilience"+"commitment"	1	0	0	0	2	0	**3**
"personal resilience"+"leadership"	**2**	0	1	0	1	0	**4**
"resilience"+"team performance"	1	0	0	0	2	0	**3**
"personal resilience"+"employee engagement"	0	0	0	0	0	0	**0**
"Personal Resilience Questionnaire"	0	1	1	1	**8**	**6**	**17**
"measuring resilience"	2	1	2	1	**6**	**9**	**21**
"resilience survey"	0	0	0	0	**4**	0	**4**
"organizational resilience"	**20**	1	18	6	**10**	**14**	**69**
"organisational resilience"	7	0	**9**	0	0	**1**	**17**
"organizational flexibility" / "organisational flexibility"+resilience	**3**	1	2	2	1	1	**10**
Total	40	18	35	19	65	65	242
Total reviewed	25	0	9	0	59	64	**157**

The literature search proceeded in three phases: title / abstract keyword search; body keyword search, review and reference selection; and detailed reference review. During each phase, references were eliminated because they were redundant or not relevant to the topic. In addition, in the last phase various references were added to the analysis based on references in the reviewed references and the associated bibliographies. During the first two phases, the following inclusion criteria were rigorously applied:

- The reference must have been from an academic, peer-review publication or journal.
- The reference must have been dated after 1985 and available in English.
- Title or abstract of the report or study must have included one of the title / abstract keyword search terms (first phase), and the body of the text must have included one of the keyword / text search terms (second phase).

Phase I. Title / abstract keyword search: The selected databases were searched for the keywords indicated in Table 2.

The title / abstract keyword search yielded a total of 242 documents and references as detailed in Table 2. For each search term, the databases that appeared to have the most hits were chosen to proceed to the next phase of analysis for further review. The researcher decided to include more references from the ProQuest and PsycINFO databases, because these were generally more focused on resilience as a construct, a key focus of this thesis. This screening resulted in the selection of 157 references to proceed to Phase II.

Phase II. Body keyword search, review and reference selection: The bodies of the 157 references from the first phase were then searched for the following keywords:

- sales
- ñsales growthò
- productivity
- ñproactive work behaviorò
- commitment
- ñemployee engagementò
- ñjob satisfactionò
- ñvoluntary turnoverò
- performance
- reliability
- validity

References with óhitsô were then scanned and selected based on the degree to which the article, report or study included a discussion regarding how personal resilience was correlated to positive organizational outcomes. This phase of the literature search resulted in 55 references being selected for detailed review.

Phase III. Detailed reference review. Each reference was reviewed in detail for information regarding resilience, resilience constructs and their relationship to positive organizational outcomes. Of the 55 references from the database search, only nine were used in this thesis. However, the process of review led to several additional, highly relevant sources of information and research. These resources were also reviewed in detail. Lastly, the researcher leveraged the internet, books, software and references currently in his possession or accessible through the Company to add additional research resources.

Constructs of Resilience

A review of academic literature yielded an almost infinite number of definitions of óresilience.ô Indeed, a Google search of ñdefinition of resilienceò yielded 128,400 hits. (Google, Inc., 2011) In the past 10 years, 1118 articles with ñresilienceò in the title have been published in PubMed (National Center for Biotechnology Information, 2011) and 824 theses and dissertations have been published in the ProQuest Dissertations & Theses database. (ProQuest LLC, 2011) A comprehensive definition was provided by Horne & Orr (1998). ñResilience is a fundamental quality of individuals, groups, organizations, and systems as a whole to respond productively to significant change that disrupts the expected pattern of events without engaging in an extended period of regressive behavior. This robust response capability is a direct reflection of the richness of internal/external connections for physical, emotional, and resource support in learning-alternative adaptive behavior.ò (p. 31) Conner (1998) defined resilience as ñthe ability to absorb large amounts of disruptive change without a significant drop in quality and productivity standardsò (p. 67) For this thesis, a simple definition was developed: *the ability to adapt to or recover from significant change and remain productive.* This thesis, and therefore the literature review, was focused on individual resilience, specifically the impact that the resilience of an individual sales manager from any industry has on his or her teamôs demonstrated ability to meet or exceed sales targets.

An optimistic outlook, confidence and a sense of self-worth were recurring themes throughout the academic literature. A one-year longitudinal study of 457 Finnish citizens beginning in 1999 measured *optimism, self-esteem, mental distress* and *physical symptoms*. They found that the *optimism-self-esteem* construct, together approximating ñpersonal resilienceò, was highly stable over time, and that personal resilience at Time 1 was a valid predictor of low mental distress in Time 2. (Makikangas, Kinnunen, & Feldt, 2004)

Mallak (1998) suggested that ña resilient individual uses positive coping strategiesò (p. 9) and proposed seven principles for developing resilience within teams: *Perceive experiences constructively; Perform positive adaptive behaviors* (e.g., proactive, situation-driven problem solving); *Ensure adequate external resources* (to facilitate positive adaptive behaviors); *Expand decision-making boundaries* (also to facilitate positive adaptive behaviors); *Practice bricolage* (i.e., create solutions in the moment out of what is available); *Develop tolerance for uncertainty; and Build virtual role systems* (i.e., team members understand the role of the team and all its members).

In interviews with eight teachers and eight teacher leaders, Patterson, Collins, & Abbott (2004) defined resilience as ñusing energy productively to achieve school goals in the face of adverse conditionsò (p. 3) and found that resilient teachers share attributes which the researcher summarized as: *clarity of purpose* (have values that guide decisions; focus on children and their learning; know when to get involved and when to let go), *mutual support* (mentor each other; get emotional & intellectual support), *learning orientation* (value and seek out professional development), *flexibility in approach* (do whatever it takes to help the children succeed; are flexible and innovative regarding teaching methods), and *proactive optimism* (avoid victimhood; take charge and solve issues) (pp. 5-6)

Jew (1999), through a series of studies with adolescents, developed The Resiliency Scale based on 49 items, each graded on a 5-point Likert scale, and three resilience subscales. These subscales were defined as: *Future Orientation* (optimism and confidence about the future; future goals); *Active Skill Acquisition* (learning orientation; and other-person orientation); and *Independence/Risk-taking* (decision-making; decisiveness; and risk-taking).

In a study of 139 people working in the public housing and community development sector, Wanberg and Banas (2000) assessed the relationship between individual and contextual resilience factors on workplace outcomes. These outcomes were *job satisfaction*, *work irritation* and *intent to leave*. O*penness to change* was tested as a moderator. Personal resilience was characterized as a combination of *self-esteem, optimism* and *perceived control*. The context factors were *information* (about the change), *participation* (in the change effort), *change related self-efficacy* (i.e., skills and ability to handle change and function well), *social support* and *personal impact* (i.e., an individualôs perceived impact on himself or herself). *Openness to change* was characterized by two factors: *willingness to accept or accommodate the change* and *positive view of the change.* The study found significant positive correlations between *personal resilience, information* and *change related self-efficacy* and *willingness to accept or accommodate the change,* and between *participation* and *positive view of the change. Social support* and *personal impact* were not found to be predictors of either scale of *openness to change.* Thus *personal resilience* and most of the contextual factors were predictive of *openness to change*. Moreover, high levels of both of the sub-scales of *openness to change*, when considered separately, were each found to be predictive of high *job satisfaction,* low *work irritation* and low *intention to leave*. When both sub-scales were included in the regression, *positive view of the change* was not significant due to the correlation between the two sub-scales. Lastly, the study determined that, with the exception of a positive correlation between *personal impact* and *work irritation,* none of the personal resilience or contextual factors, had a direct significant relationship on the workplace outcomes, thus indicating that *openness to change* is indeed a moderator of *personal resilience* and change-specific contextual factors.

Developed by psychiatrists Kathryn Connor and Jonathan Davidson (2003), the Connor-Davidson Resilience Scale (CD-RISC) includes five factors related to personal resilience: *Factor 1 (personal competence), Factor 2 (trust in one's instincts or tolerance of negative effects), Factor 3 (positive acceptance of change), Factor 4 (control)* and *Factor 5 (spiritual influences)*. In a study of over 800 people, which included a mix of general population, primary care patients and psychiatric patients, Connor and Davidson determined that the CD-RISC demonstrated high internal consistency. Cronbach Alpha coefficient for the general population group was .89. They also found high test-retest reliability (stability coefficient of .87) and significant convergent validity with the Kobasa hardiness measure (r=.83), the Perceived Stress Scale (r=-.76), the Sheehan Stress Vulnerability Scale (r_s=-.36), the Sheehan Disability Scale (r=-.62) and the Sheehan Social Support Scale (r_s=.36). The instrument is self-reported and contains 25 individual items, each rated against a 5-point Likert scale.

The Resilience Scale (Wagnild, 2009) is a 25-item assessment based on five resilience fundamental elements: *Perseverance* (continuing in the face of adversity); *Equanimity* (sense of humor; taking life as it comes); *Meaningfulness* (clarity of purpose in life); *Self-reliance* (belief in self, capabilities and experiences); and *Existential Aloneness* (sense of ñuniqueness and perhaps freedomò (p. 106)). These five elements were determined through factor analysis to be expressed as two major factors: *Acceptance of Self and Life*, and *Individual Competence*. In a meta-analysis of 12 studies of The Resilience Scale, Wagnild (2009) verified the construct validity of the model with statistical significance.

Based in part on The Resilience Scale, Windle, Markland and Woods (2008) conducted an analysis of 1853 questionnaires and developed a Psychological Resilience construct consisting of three elements: *Self-esteem* (belief in self; confidence; and self-respect); *Interpersonal Control* (create and maintain positive relationships); and *Personal Competence* (self-reliance, perseverance, reliability). The reliability analysis of this scale yielded an overall Cronbach Alpha coefficient of .83.

Ego-resiliency refers to the ability to modulate oneôs ego-control mechanisms. That is, the ability to be flexible and adapt to the stressors in oneôs environment. The opposite of ego-resiliency is ego-brittleness, which is an inability to adapt, respond, cope remain organized or bounce back under environmental stress.

(Block & Block, 1980) Klohnen (1996) developed a 29-item self-reported assessment instrument (The ER Scale) that assessed ego-resiliency in four dimensions: *Confident Optimism* (positive outlook; strong feelings of self-worth; action initiation; and follow-through); *Productive Activity* (goal-setting; persistence; self-sufficiency; competence; and resourcefulness); *Interpersonal Warmth and Insight* (close, supportive relationships; understand self and others; tolerance of ambiguity; and open to new experiences); and Skilled *Expressiveness* (assertive; self-assured; and spontaneous). Klohnenǿs research indicated this construct has high internal consistency. In one study of two different sample populations, the Cronbach Alpha coefficients were .88 and .81. The construct also demonstrated high convergent validity with the 472-item California Psychological Inventory (CPI), with validity coefficients of .62 and .59 respectively. In addition, the ER Scale demonstrated relatively high convergent validity with the Adjective Check List (ACL), a widely used personality assessment.

The Brief Resilience Scale (BRS) provides a single resilience ñscoreò based on a six-item questionnaire. Specifically, the BRS is designed to measure the respondentǿs ability to ñbounce backò from a stressful event. In a study of 192 students, 112 cardiac rehabilitation patients, 20 fibromyalgia patients and 30 healthy control patients, the BRS results were compared with the results of several other statistically valid and reliable instruments which measure resilience, optimism, coping, social relationships and health-related outcomes. The BRS was found to have good internal consistency and test-retest reliability, as well as high convergent validity with 17 other instruments that measure resilience, personal characteristics, coping styles, social relationships and health-related outcomes. The BRS returns a single score for resilience, versus scores in individual elements of resilience. (Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008)

The Resilience Factor Inventory® - Individual (RFI-I) was developed by Adaptiv Learning in partnership with The Hay Group and is an individual resilience measurement instrument, with normative data from more than 15,000 individuals. The RFI-I is a 60-item instrument that measures seven elements of resilience: *Emotion Regulation* (keeping your emotions in check); *Impulse Control* (keeping your behavior in check); *Causal Analysis* (diagnosing and solving problems effectively); *Self-efficacy* (belief in your ability to handle situations that come your way); *Optimism* (belief in a bright future); *Empathy* (identifying what motivates others); and *Reaching Out* (seeking out new opportunities and challenges). (Jackson & Watkin, 2004; Reivich & Shatte, 2002)

The Resilience Scale for Adults (RSA) (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005; Hjemdal, Friborg, Braun, Chantal, Linkowski, & Fossion, 2011) was originally developed in Norway in 2001 and uses a six factor scale to measure resilience, as indicated in Table 3, with a high degree of internal consistency. Cronbach Alpha coefficients ranged from .73 to .83. In a 2005 study, the RSA was found to have significant construct validity with the Big Five personality factors (Perception of self ï Emotional Stability, r=.79; Planned future ï Conscientiousness, r=.63; Social Competence ï Extroversion, r=.68; Social Competence ï Agreeableness, r=.69; Social resources ï Agreeableness, r=.66; and Structured style ï Conscientiousness, r=.83).

The RSA was also found to have significant construct validity with social intelligence per the Tromsø Social Intelligence Scale (Social Competence ï Social Skills, r=.88) (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005, p. 35). There is no analogous measure of Family cohesion in the 5PF scale. (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005, p. 35). Lastly, in a 2011 study the RSA was found to be valid across cultures and languages. (Hjemdal, Friborg, Braun, Chantal, Linkowski, & Fossion, 2011)

Table 3. Description of the *Resilience Scale for Adults* Dimensions. (Hjemdal, Friborg, Braun, Chantal, Linkowski, & Fossion, 2011, p. 59)

RSA Factor	*Definition*
Perception of self	ñConfidence in their own abilities and judgments, self-efficacy and realistic expectationsò (2011, p. 59)
Planned future	ñThe ability to plan ahead, have a positive outlook, and be goal orientedò (2011, p. 59)
Social competence	ñSocial warmth and flexibility, ability to establish friendships, and the positive use of humorò (2011, p. 59)
Structured style	ñThe preference of having and following routines, being organized, and the preference of clear goals and plans before undertaking activitiesò (2011, p. 59)
Family cohesion	ñMeasures whether values are shared or discordant in the family and whether family members enjoy spending time with each other, have an optimistic view of the future, have loyalty toward each other, and have the feeling of mutual appreciation and supportò (2011, p. 59)
Social resources	ñAvailability of social support, whether they have a confidante outside the family (such as friends or other family members that appreciate and encourage them), and whether they may turn to someone outside the family for help if neededò (2011, p. 59)

Daryl Conner and the staff at ODR, Inc. (Conner, 1992; Conner Partners, 1994; Conner, 1998) developed a framework for individual, team and organizational resilience based on extensive research and their experience consulting with companies to implement strategic change. Leveraging 26 other, well-established psychometric instruments, Conner defined resilience as ñthe ability to absorb large amounts of disruptive change without a significant drop in quality and productivity standardsò (Conner, 1998, p. 67) and developed a construct with five subscales. According to Conner, resilient people are: ñ*Positive* (displays a security and self-assurance that are based on their view of life as complex but filled with opportunity); *Focused* (have a clear vision of what they want to achieve); *Flexible* (demonstrate a special pliability when responding to uncertainty); *Organized* (develop structured approaches to managing ambiguity; and *Proactive* (engage change rather than defend against it).ò (Conner, 1992, p. 238) Hoopes and Kelly (2004) further refined the construct by defining the *Positive* and *Flexible* characteristics in terms of internally focused and externally focused sub-scales, titled *Positive (the World), Positive (Yourself), Flexible (Thoughts)* and *Flexible (Social)* (p. 59), as detailed in Table 4.

Table 4. Personal Resilience® Construct (Conner Partners / Resilience Alliance, 2010, pp. 5-6)

Characteristic	*Definition*
Positive (the World)	• ñThe tendency to see opportunities in a variety of situationsò • Corrolates with ñpositive affectivity, optimistic attributional style and related measures (such as life satisfaction)ò
Positive (Yourself)	• ñGeneral sense of self-efficacy in responding to situationsò • Corrolates positively with ñinternal locus of control, self-esteem and self-efficacyò
Focused	• ñClarity of purpose; that is, the extent to which the person has a sense of direction in his or her lifeò
Flexible (Thoughts)	• ñThe extent to which a person tends to be comfortable with ambiguity, to entertain unfamliar or contradictory ideas, and to enjoy working with complex ideasò • Corrolates positively with ñambiguity tolerance, creativity, and cognitive complexityò
Flexible (Social)	• ñThe extent to which a person gives and receives social support; that is, the interdependence that they recognize and have established with those around themò • Corrolates positively with ñsocial support and extroversionò and negatively with ñalienationò
Organized	• ñThe extent to which a person can impose structure on ambiguous situations, including the ability to systematize, sequence and planò
Proactive	• ñThe extent to which a person is willing to act on his or her environment in the face of uncertainty or riskò • Corrolates positively with ñaction tendencies and risk toleranceò

In a secondary analysis of PRQ data collected by ODR, Inc. from over 10,000 respondants, Colgate (1995) developed a similar, though not identical, construct for resilience. The seven resilience factors emerging from her analysis are captured in Table 5.

Table 5. Colgate’s Resilience Factors (1995)

Characteristic	*Definition*
Identity	ñOneôs resolve or deliberate intention toward dealing with life based on oneôs sense of identityò (p. 101)
Cognitive Flexibility	ñOneôs comfort level with or desire for the pursuit of novelty, challenge and/or new solutionsò as well as ñoneôs tolerance for ambiguityò (p. 102)
Social Comfort	ñOneôs degree of comfort with people, social activities and social behaviorsò as well as ñoneôs social óventuresomenessôò (p. 102)
Self-Efficacy	ñA focused self-confidence based on oneôs belief that one has the capabilities necessary to deal with life, obstacles, and/or crisesò (p. 102)
Organization	ñA commitment to goals and the implementation of time management, planning, and scheduling so that goals can be attainedò (p. 102)
Social Support	ñA willingness to become involved and develop relationships with othersò and ña willingness to reach out to others as well as to allow others to reciprocateò (p. 103)
Optimism	ñAn ability to maintain a positive attitude, perspective, or thought process toward the world in the face of adversityò as well as ña willingness to ensure that things will indeed be resolved successfully by taking control of oneself, exerting willpower, and/or choosing a positive frame of reference.ò (p. 103)

Colgateôs Resilience Factors correlated closely with the Personal Resilience® characteristics (Conner Partners, 1994) per Table 6. Of particular interest in Colgateôs research was her finding that people who regularly exercise three or more times per week had average scores that were higher in all seven Factors than people who never or rarely exercise. In fact, these differences were statistically significant in four factors for men, which were *Identity, Optimism, Self-efficacy* and *Organization*, and five Factors for women, which were *Identity, Optimism, Self-efficacy,* *Organization* and *Social Comfort*, furthering the theory that exercise and physical health are significant factors that contribute to high degrees of personal resilience. (1995, p. 151) Lastly, based on her extensive research into resilience, Colgate concluded that resilience is in fact a developmental process versus a static trait or state of being, and thus can change over time. (1995, pp. 17-18)

Table 6. Comparison of Personal Resilience® Characteristics with Colgate's Resilience Factors (Colgate, 1995, p. 135)

Personal Resilience® characteristics	Colgate's Resilience Factors
Positive (World)	Optimism (r=.99)
Organized	Organization (r=.96)
Flexible (Thoughts)	Cognitive Flexibility (r=.85)
Positive (Yourself) Focused	Identity (r=.80) Self-efficacy (r=.79)
Flexible (Social)	Social Support (r=.69) Social Comfort (r=.66) Identity (r=.65)
Proactive	Social Comfort (r=.75) Cognitive Flexibility (r=.69) Self-efficacy (r=.57)

In a study of five transient work teams, defined as non-permanent work groups that must function as a true team to deliver challenging results, such as a product launch team, Altman Dautoff (2002) leveraged the Personal Resilience® Questionnaire (PRQ) (Conner Partners, 1994), as well as a group resilience summary, to understand which individual and organizational resilience factors drive team performance. In addition to analyzing PRQ data, Altman Dautoff tested constructs for individual and organizational resilience in a series of interviews and focus groups. The elements of individual resilience tested were the individualǿs: *Relationship with sponsors; Manage situations with minimal untoward effects; Confidence to solve the problem; Flexibility; Tolerate risks*; and *Cope with stressors*. The elements of organizational resilience were the organizationǿs: *Efficient use of organizational resources; Support for purpose; Common goals; Ability to absorb change; Lack of minimal dysfunctional behavior*; and *Support and encouragement*. The responses during the interviews and focus groups were mapped to the six individual and six organizational characteristics. *Flexibility* and *Confidence to solve the problem* accounted for 82% of the response coding in all of the focus groups; *Manage situations with minimal untoward effect; Tolerate risks*, and *Cope with stressors* accounted for 14% of the response coding. In addition, *Positive (Self)* and *Flexible (Social)* were the most prominent characteristics from the PRQ results, and *Organized* was the least prominent. *Support for purpose* and *Efficient use of organizational resources* accounted for 32% and 25%, respectively, of the total coded organizational resilience responses. The third most frequent response was *Lack of minimal dysfunctional behavior*, indicating that minimal dysfunction was not a requirement for the effective functioning of transient teams. Altman Dautoff concluded that while organizational resilience factors are important, the individual resilience characteristics of the team members are the most important contributors to team success. (p. 139)

The relationship between personal resilience and transformational leadership behaviors has been established in at least three studies. Research conducted by Isaacs (2004) compared the results of Personal Resilience® Questionnaires (Conner Partners, 1994) and Leadership Practices Inventory (LPI) (Kouzes & Posner, 2002) completed by 544 high school principals, assistant principals and teachers from six different school districts in Florida. The LPI measures transformational leadership behaviors in five areas: *Challenging the Process; Inspiring a Shared Vision; Enabling Others to Act; Modeling the Way;* and *Encouraging the Heart*. Table 7 details the statistically significant correlations from the study. In addition, Isaacs found that on average, principals over 50 years of age scored statistically higher on *Proactive*, while principals under 50 scored higher on *Positive (the World).* Female principals scored statistically higher than males on *Focused*, while males scored higher on *Flexible (Social).* Principals with Bachelorŏs or Master's degrees scored statistically higher on *Positive (the World)* and *Flexible (Social)* than did principals with specialist or doctorate degrees. And principals with nine or more years of teaching experience scored statistically higher on *Positive (the World), Focused* and *Flexible (Thoughts)* than principals with less teaching experience. Principals with three to eight years of administrative experience scored statistically higher than more experienced principals on *Focused*, while principals with more experience scored statistically higher on *Proactive*. In summary, while some demographic variations existed, Isaacs found that in general there was a statistically significant correlation between resilience, as measured by the PRQ, and transformational leadership behaviors, as measured by the

LPI. The Isaacs study did not attempt to further determine if these characteristics and behaviors had a significant impact on school or student performance.

Table 7. Correlations between Personal Resilience and Leadership Practices (Isaacs, 2004)

Personal Resilience® Questionnaire characteristics (Conner Partners, 1994)	***Leadership Practices Inventory*** (Kouzes & Posner, 2002) ***dimensions***
Positive (the World)	Inspiring a Shared Vision (r=.77) Enabling Others to Act (r=.56)
Focused	Inspiring a Shared Vision (r=.58) Modeling the Way (r=.51)
Flexible (Thoughts)	Inspiring a Shared Vision (r=.54) Modeling the Way (r=.57) Encouraging the Heart (r=.53)
Organized	Challenging the Process (r=.55) Inspiring a Shared Vision (r=.59) Enabling Others to Act (r=.60) Modeling the Way (r=.63) Encouraging the Heart (r=.57)
Proactive	Challenging the Process (r=.53) Inspiring a Shared Vision (r=.53) Enabling Others to Act (r=.52) Modeling the Way (r=.59) Encouraging the Heart (r=.56)

Sylvester (2010) studied the relationship between the personal resilience and transformational leadership behaviors of sales professionals, including how this relationship varied based on key demographics (e.g., gender, age, level of education, years of experience, and salary level). The study leveraged the Personal Resilience®

Questionnaire (PRQ) (Conner Partners, 1994) to measure personal resilience and the Leadership Practices Inventory (Kouzes & Posner, 2002) to measure transformational leadership behaviors. Respondents included 197 frontline sales professionals from 26 industries, 109 male and 88 female, with ages ranging from 19 to 80. The largest racial demographic group was White at 85.3%. Average industry experience was 12.93 years; average tenure in current employment was 6.86 years. Sylvester found a strong correlation between *Focused, Organized* and *Proactive* and total transformational leadership scores. Moreover, she found no statistical relationship between age, education, gender, job tenure, years of experience, or income level and transformational leadership behaviors. Of the variables studied, only resilience, as measured by the PRQ, had a statistically significant relationship to transformational leadership behaviors. PRQ scores accounted for 22.7% of variance, which indicated that resilience was an important factor, but other, unstudied factors also had significant impact. (pp. 153-154)

In addition, Sylvester (2010) found that, in general, women scored higher on the PRQ than men, and this was statistically significant regarding *Focused* and *Flexible (Social)* (p. 155). She also found no significant relationship between PRQ scores and age, education, or salary level. (pp. 198-199) She did find a correlation between *Proactive* and job tenure. (p. 180) Like the Isaac study, the Sylvester study did not attempt to research the further relationship between transformational leadership and sales performance.

Peterson, Walumbwa, Byron and Myrowitz (2009) did study the impact of resilience and transformational leadership on firm performance. The study included

CEOs of 49 start-up technology firms and 56 established technology firms. *Positive psychological traits* were defined by three subscales: *Optimism* was measured using the 6-item Life Orientation Test; *Hope* was measured using the 8-item Trait Hope Scale; and *Resiliency* was measured using the Wagnild & Young Resilience Scale. *Transformational leadership* was measured using the 20-item Multifactor Leadership Questionnaire (Form 5x-Short). *Firm performance* was calculated as a percentage of net income goals achieved. The researchers found that: 1) the relationship between *Positive psychological traits* and *Transformational leadership* was positive and statistically significant (p. 360); 2) *Transformational leadership* fully mediated the relationship between *Positive psychological traits* and *Firm performance* (p. 362); and 3) *Transformational leadership* had a positive impact on the *Firm performance* of both start-up and established firms, but it is more positive for start-ups. (p. 363).

The three previous studies lead to an interesting question: if executive resilience (mediated by transformational leadership behaviors) correlates with better firm performance in technology companies, and leader resilience also correlates with transformational leadership behaviors with sales professionals, could we expect District Manager (DM) resilience to correlate with better sales performance?

One study attempted to answer this question. Seligman and Schulman (1986) tested 94 insurance sales agents using the Attributional Style Questionnaire (ASQ). This questionnaire asked respondents to review six positive scenarios and six negative scenarios, and to decide if each situation were to happen to them, what would they feel would have caused the situation, and then to rate these causes along three dimensions: *internality* (to what extent was it their fault); *stability* (to what extent is this going to continue in perpetuity); and *globality* (to what extent does this impact everything else in their lives). Individuals who consistently saw causes of change as highly internal, stable and global tended to exhibit pessimistic behaviors. Seligman and Schulman sought to test the impact of this pessimistic attitude by comparing the sales agentsô ASQ results with their sales results in their first two years. They discovered that, when confronted with negative scenarios, sales agents with top quartile ASQ results (i.e., relatively optimistic perceptions of causation) sold 88% more insurance in their first two years than people in the lowest quartile. A second study of 104 sales agents found similar results regarding optimism and productivity, as well as that top quartile agents were three times more likely to remain with the organization after one year than bottom quartile agents. (Seligman & Schulman, 1986)

Synthesis of Resilience Constructs

The constructs of resilience emerging from the literature search are summarized in Appendix A and are synthesized into six sub-scales that fall into two categories. The first is focused on the internal resources that resilient people access to cope, persevere, adapt and when necessary bounce back. These *Internal resilience factors* are processes that occur predominantly in their own minds. The second category is focused on external resources resilient people use. These *External / contextual resilience factors* are processes that occur predominantly between the individual and his or her environment (interacting with other people or taking some kind of action). All of these factors appear to work in concert with one another, and in several cases overlap.

Internal resilience factors. Internal thought processes and perceptions of change are key elements of personal resilience. These include *General optimism and confidence* (positive perceptions of, and overall confidence in, life and the change in question and belief in one's self), *Control and clarity of purpose* (clarity about what is and is not important and staying on course to achieve those priorities), and *Open-mindedness and mental agility* (tolerance for ambiguity and thinking in parallel dimensions).

External / contextual resilience factors. These factors describe how one chooses to interact with the change and one's external resources. These include *Quality of connections beyond self* (giving and providing support, spiritual support and maintaining effective relationships), *Planning and organizing* (doing detailed diagnosis and planning, sticking to task, and leveraging organizing systems, routines and processes) and *Action learning orientation* (taking action under uncertainty and viewing such action as a learning opportunity versus risky).

In addition to identifying a general construct of resilience, the literature search leads to two other hypotheses to test: 1) *Higher personal resilience has a positive effect on organizational results;* and 2) *The effect of resilience on performance is mediated through other factors.*

Higher personal resilience has a positive effect on organizational results. As previously mentioned, Seligman and Schulman (1986) discovered that relatively optimistic insurance salesmen sold 88% more insurance in their first two years and were three times more likely to remain with the organization after one year than relatively pessimistic salespeople. Peterson, Walumbwa, Byron and Myrowitz (2009) found that *Positive psychological traits* (including resilience), mediated by high *Transformational leadership* behaviors, had a positive impact on the *Firm performance.* In her analysis of successful transient work teams, Altman Dautoff (2002) established that personal resilience factors, especially *Flexibility* and *Confidence to solve problems*, were critical to team success.

The effect of resilience on performance is mediated through other factors. Peterson, Walumbwa, Byron and Myrowitz (2009) found that *Transformational leadership* fully mediated the effect of *Positive psychological traits*, including *Resiliency*, on *Firm performance*. Wanberg and Banas (2000) found that the impact of *personal resilience* on employeesô*job satisfaction, work irritation* and *intention to leave* was fully mediated by *Openness to change*, which is composed of *Willingness to accept or accommodate the change* and *Positive view of the change*. Therefore other factors, principally managerial or leadership behaviors and skills, very likely mediate the effect of resilience on organizational performance.

Comparison of Resilience Measurement Instruments

Several constructs and measurement instruments have been detailed in the preceding pages. In fact, the literature search revealed several more resilience assessment tools, some with credible psychometric qualities and some without any apparent evaluation or validation at all. The literature search discovered two well-executed meta-evaluations of several resilience instruments. Ahern, Keihl, Sole and Byers (2006) conducted a meta-evaluation to determine which resilience measurement scales would be the best for assessing resilience in adolescents. After applying exclusion criteria to 370 articles, the researchers ultimately included six in their detailed study, and each was evaluated based on several factors, including the theoretical basis of the scale, the demographics, setting and type of study, psychometric properties, study results, and instrument advantages, disadvantages and application. The researchers determined that the "best" scale was the Wagnild & Young Resilience Scale, followed by both the Connor-Davidson Resilience Scale and the Adolescent Resilience Scale (Oshio, Kaneko, Nagamine, & Nakaya, 2003), which was not reviewed in this thesis. Windle, Bennett, and Noyes (2011) also researched several well-established resilience measurement scales for psychometric rigor and quality. Out of 2979 studies and articles initially screened for retrieval, 271 were included based on rigorous exclusion criteria. From these articles and studies, 19 resilience scales were identified and evaluated based on a scoring system that included validity (content, criterion and construct), internal consistency, absolute/relative measurement error, responsiveness (detect changes over time), floor / ceiling effects (# of people with extreme high or low scores) and interpretability (the degree to which quantitative scores can be assigned qualitative meaning). The researchers determined that the Connor-Davidson Resilience Scale, The Resilience Scale for Adults and the Brief Resilience Scale had the best psychometric qualities. The Personal Resilience® Profile was not included in either study. Another very good summary of 15 resilience scales and associated variations was found at the Resilience and Healthy Ageing Research Development Network website (Resilience and Healthy Ageing Network, 2010), but provided no evaluation of the scales.

Why was the Personal Resilience® Profile Selected to Measure Personal Resilience?

Table 8. Personal Resilience® Profile Internal Reliability (Conner Partners, 1994)

Personal Resilience® Profile sub-scale	Cronbach Alpha Coefficient
Positive: The World	.83
Positive: Yourself	.81
Focused	.82
Flexible: Thoughts	.71
Flexible: Social	.74
Organized	.68
Proactive	.65

Internal reliability. Resilience Alliance calculated the Cronbach Alpha coefficients for each sub-scale of the Personal Resilience® Profile (Conner Partners, 1994), based on approximately 50,000 respondents. The results, shown in Table 8, indicated the degree to which the questions which make up each sub-scale measure the same concept or component of resilience:

Table 9. **Personal Resilience® Profile Stability Coefficients** (Conner Partners, 1994)

Personal Resilience® Profile sub-scale	Average Stability Coefficient across four testing cycles
Positive: The World	.86 (.60 - .95)
Positive: Yourself	.87 (.71 - .98)
Focused	.85 (.71 - .97)
Flexible: Thoughts	.85 (.80 - .92)
Flexible: Social	.85 (.80 - .91)
Organized	.91 (.85 - .96)
Proactive	.80 (.71 - .89)

Test-retest reliability. Conner Partners administered an initial Personal Resilience® Questionnaire (PRQ) (Conner Partners, 1994) to a group of undergraduate students at the Georgia Institute of Technology, and retested two weeks, one month and two months thereafter for a total of four cycles. Participants were asked to respond to questions in each of the test cycles as they felt at that moment, versus attempting to be consistent with the previous test cycle. Conner Partners analyzed both the degree to which scores for each sub-scale remain consistent cycle-to-cycle, the relative order of sub-scales, and the score gap between each sub-scale for each participant cycle-to-cycle. In the first reliability test, the stability coefficient for each sub-scale and each cycle pairing (e.g., cycle one vs. cycle two; cycle one vs. cycle three; and so on) ranged for .60 to .98, with an average stability coefficient of .86. Average stability coefficients for each sub-scale are shown in Table 9, with high and low coefficients in parentheses.

The second reliability test examined the degree to which the scores were in the exact same order with the exact same gap between scores. A correlation of 1.00 would indicate an exact match for each cycle of testing. The intervals between cycles ranged from two weeks to eight weeks and the percentage of respondents with Relative Order / Gap Consistency Coefficients of .60 or higher ranged from 78% (for the eight week interval) to 88% (for the six week interval), indicating a high degree of test-retest reliability.

In a 1995 New Mexico State University study, PRQs were administered to the same group seven weeks apart with an average test-retest reliability coefficients ranging between .60 (for *Focused*) and .79 (for *Positive: the World*), with an overall average test-retest reliability coefficient of .69. (Weber, 1996)

Construct validity. A 1993 study of 226 undergraduates at the Georgia Institute of Technology compared PRQ results with 26 other psychometric scales to test construct validity. The study found that, with a few exceptions, the sub-scales of the Personal Resilience® Profile (PRP) were statistically consistent with similar psychometric measures. (Conner Partners / Resilience Alliance, 2010) In addition, a study of 109 people (Taylor, 1997) (Taylor, 1997) correlated the relationship between the Personal Resilience® Profile sub-scales and the NEO-PI-RÊ subscales. The

NEO-PI-RÊ is a statistically valid and reliable personality inventory that measures the ôBig 5ö personality traits, which are *Neuroticism, Extroversion, Openness to Experience, Agreeableness* and *Conscientiousness*. The study validated that *Neuroticism* negatively correlated with all PRP factors, *Extroversion* positively correlated with all factors, *Openness to Experience* positively correlated with *Flexible (Thoughts)* and *Proactive*, *Agreeableness* positively correlated with *Positive (the World)* and *Flexible (Social)* and that *Conscientiousness* positively correlated with *Positive (the World), Positive (Yourself), Focused, Flexible (Social)* and *Organized*.

Predictive validity. ODR, Inc., now Conner Partners, conducted two studies to determine if personal resilience played any part in professional success. In the first study of 86 employees at a financial institution, Personal Resilience® Profile sub-scales were compared to the performance ratings of 66 ñhigh performersò, determined by their employer, and 20 ñlow performers.ò The ñhigh performersò scored consistently higher than the ñlow performersò in every sub-scale except *Organized* and *Flexible (Thoughts)*. In the second study, members of a support services group from a financial services organization took the PRQ and were then divided into three groups: the first consisted of individuals with performance ratings greater than one standard deviation below the mean; the second consisted of individuals with performance ratings within one standard deviation from the mean; and the third consisted of individuals with performance ratings greater than one standard deviation above the mean. The third group consistently outscored the first group in the *Positive (the World), Positive (Yourself)*, and *Focused* sub-scales. The second group consistently outscored the first group in the *Focused* sub-scale. (Conner Partners / Resilience Alliance, 2010) This study indicated that, at least for these two sample groups within these two organizations, there was a correlation between performance and several of the sub-scales of the Personal Resilience® Profile. Further study is needed to determine which is the cause and which is the effect, and these results should not be used in any employment action (e.g., selection, hiring, promotion, or termination), with the possible exception of identifying development opportunities. A full psychometric validity study and disparate impact testing, consistent with U.S. Equal Employment Opportunity Commission or other appropriate national legal guidelines, should be completed.

In her study of 197 sales professionals, Sylvester (2010) found strong overall reliability of the PRQ. The overall Cronbach Alpha coefficient was .945, with individual characteristics exhibiting Cronbach Alpha coefficients of .678 to .846. *Flexible (Thoughts)* and *Proactive* were slightly lower that the other characteristics. (p. 133)

As stated previously, many other resilience measurement instruments and frameworks have been demonstrated through research to be statistically valid and reliable. The Company chose to use the ODR/Conner Partners/Resilience Alliance framework and definitions of resilience for several reasons, in addition to its demonstrated reliability and validity. First, the underlying database included PRQ scores from over 70,000 people, so it had a broad database with benchmark individual scores. Second, the 7-characteristic framework was intuitive and broad, covering a wide range of resilient skills and attitudes. Third, the characteristics seemed relevant to the issues the Company was facing.

Chapter 3

RESEARCH METHODOLOGY

Methodology Overview

Based on the literature search, available data, identified research constraints and the research hypothesis, the researcher developed several hypotheses and exploratory questions, and determined Exploratory Factor Analysis and Structural Equation Modeling to be the appropriate approaches to testing the hypotheses. In support of this analysis, the measured resilience and skills data were tested for internal reliability, and correlation analysis was conducted to understand the correlation between annual performance ratings, quarterly financial performance and quarterly managerial performance for 2009 and 2010. The remainder of this chapter details the research methodology.

Discussion of Company Data Available

The Company merged four of its national selling teams into two in 2010. In order to remain consistent across the analysis, managers on the two merged selling teams were considered ŏassignedô to their 2010 selling teams in January of 2009. The Company also provided, or gave permission to obtain, the following data on each District Manager (DM):

- Results from the Personal Resilience® Questionnaire

- Annual Skills Assessment results from 2009 and 2010
- Quarterly Sales Performance (financial and managerial) results from 2009 and 2010
- Annual Performance Review results from 2009 and 2010
- Basic demographic data (for the purposes of characterizing and ensuring consistency between the included sample versus the total population)

Measurement Variables & Instruments

Sales performance (financial and managerial) data. Quarterly sales performance data consisted of a financial component, which was district performance against targets expressed as a percentage, and a managerial component for each individual District Manager (DM), which was an assessment of the DMôs performance against qualitative measures. The Companyôs sales compensation team provided this data for 2009 and 2010 in MS-Excel format. This dataset also indicated the national selling team, region and district for each DM. The managerial component, hereafter referred to as *Sales Performance (managerial)*, was converted into annual averages for 2009 and 2010. All data were imported into the researcherôs master dataset.

Performance reviews and skills assessments. This data for 2009 and 2010 were provided by the Companyôs third party sales data analyst in MS-Excel format and included the DMôs name, performance review results, skills assessments and years of service. Upon receipt, this data were imported into the researcherôs master dataset and aligned to other data by DM name. (Names were consistent across all Company data, allowing alignment to be time-consuming but relatively straightforward.)

Demographic information. Though not used in the detailed analysis, demographic information was used to characterize the overall population, as well as the sample used in the analysis. Because individuals with incomplete information (i.e., no PRQ, skills and/or performance data) were excluded from the analysis, it was critical to ensure that the remaining sample was consistent demographically with the entire population. Partial demographic data was received from the Companyøs internal sales data analysis team in MS-Excel format, completed by the Companyøs HR team and imported into the researcherøs master dataset.

Resilience data. The DMs included in this study took the Personal Resilience® Questionnaire (PRQ) in January and February of 2009. The results were maintained by Conner Partners / Resilience Alliance, the administrator of the PRQ, in their database. The PRQ data were provided by Resilience Alliance in MS-Excel format, imported into the researcherøs master dataset and aligned by name with the other Company data. Where names were inconsistent (e.g., ñJimò versus ñJamesò), age, gender and job title data were used to confirm matching identity. Where this could not be positively confirmed, the data were assumed to be a mismatch and not mapped to the individual DM. The PRQ is a set of 75 questions (items). These questions are loaded onto seven resilience characteristics (scales) through a proprietary algorithm owned by Conner Partners and licensed to Resilience Alliance.

The historical reliability and validity of the PRQ construct and scales was documented in Chapter 2 of this thesis. In the proprietary algorithm, each participantøs raw score for each of these seven scales was compared to the raw score for all respondents in the database held by Conner Partners / Resilience Alliance, and a percentile score (the percent of respondents in the database that had a lower score) was generated. (Conner Partners, 1994; Resilience Alliance, 2008) Throughout this analysis, percentile scores were used because this approach provides normalization across all seven characteristics, and allowed comparison between the scales, as needed.

Permissions and Confidentiality Agreements

Upon signing a Company confidentiality agreement, the researcher, Thesis Advisor and First Reader received permission from the Company to use Company data provided the Companyøs identity be held confidential, no competitive information be divulged, no disruption to ongoing sales activity and all information identifying specific individuals including, but not limited to, name, sales district/region location name, sales district/region name, hire date, termination date, date transferred into or out of position, gender, ethnicity, or age be deleted prior to detailed analysis. The Company reserved the right to review the draft thesis prior to submission to ensure the above conditions were met. These confidentiality agreements are held on file at the University of Delaware.

Resilience Alliance provided the researcher, Thesis Advisor and First Reader access to the PRQ data for the Company upon completion of a confidentiality agreement which required that the data only be used for research and that respondent identity would be strictly protected and de-identified. The confidentiality agreement may be found in Appendix C.

The confidentiality requirements outlined above were consistent with each other and with the researcherõs approved IRB submission, per Appendix D.

The information regarding the pharmaceutical industry from Business Monitor International Ltd. (BMI) is proprietary to BMI and was obtained through a license owned by the Company. The researcher obtained permission via email from BMI to use this information in this thesis. A redacted version of the approval email is available upon request.

All other sources were obtained through public sources and have been appropriately cited herein.

Research Sample

The sample for this research was DMs working in a major research-based pharmaceutical company in the United States. In order to ensure consistency with the conceptual construct proposed herein, the following inclusion criteria were applied:

- Must have taken the PRQ on February 10, 2009, +/- 90 days. This time was labeled T_1.
- Had *Skills* assessment data for the July, 2009 skills assessment cycle. This time was labeled T_2.
- Had *Sales Performance (financial)* data. This time was labeled T_3. The *Sales Performance (financial)* data used for 2009 were an average

of quarterly *Sales Performance (financial)* scores for Q3 and Q4; for 2010 quarterly data were used.

- Six different scenarios were run using five different performance periods. The first two considered sales performance during the third and fourth quarter of 2009, with *Resilience* fully and partially mediated by *Skills*. The remaining scenarios considered the impact of *Resilience* and *Skills*, measured in 2009 at times T_1 and T_2 respectively, on quarterly *Sales Performance (financial)* throughout 2010. Only the fully mediated model was used for 2010 scenarios.
- In addition, two of the smaller national Selling Teams were excluded from the analysis, because in January 2010, the method for determining *Sales Performance (financial)* transitioned from strict measure of financial results versus target to either a mix of financial results and behavior evaluation or 100% behavior evaluation. These small teams were excluded to ensure consistent comparison between 2009 and 2010.

In order to ensure this reduced sample was representative of the entire population of DMs employed in 2009 or 2010, demographic data were compared and found to be consistent with the total sample of 2009/2010 DMs who took the PRQ per Appendix E.

Research Questions, Hypotheses and Exploratory Questions

Research question: What is the relationship between the personal resilience of District Managers (DMs), as measured by the Personal Resilience® Questionnaire, and quantifiable sales results of their teams?

Hypotheses: The initial model and hypotheses are illustrated in Figure 1.

Hypothesis #1: The resilience of DMs has a positive effect on assessed managerial skills.

Hypothesis #2: The managerial skills of DMs have a direct positive effect on the sales performance of their teams.

Hypothesis #3: The managerial skills of DMs mediate the effect their resilience has on the sales performance of their teams.

Hypothesis #4: The resilience of DMs has a direct positive effect on the sales performance of their teams.

Exploratory questions:

- *Exploratory question #1:* Are DM skills and DM resilience the same thing?
- *Exploratory question #2:* Do subjective DM performance reviews, specifically Annual Performance Reviews and the Managerial (leadership) component of sales incentive process, correlate to sales performance?
- *Exploratory question #3:* How long after a disruptive change does it take to reestablish the positive effect high DM resilience has,

working though a value delivery system, on organizational outcomes (e.g., the achievement of sales targets)?

Research Benefits, Risks, and Mitigation

While there are no direct benefits to the people studied in this research, the Company, and other similar companies, may benefit by better understanding potential drivers of superior sales performance, especially during and after significant organizational change. In addition, District Managers (DMs) may indirectly benefit if companies implement development programs to enhance these key drivers.

Risk to the research sample is extremely minimal to the point of being theoretical only.

- All Company data (sales performance, skills assessment, employee survey data, etc.) are already known to the Company for each individual and is a routine part of performance management and career development.
- Resilience data for each individual are known to Resilience Alliance and NOT known to the Company, nor does the Company, other than certified Personal Resilience® Questionnaire (PRQ) administrators, have access to PRQ results.
  - Data held by Resilience Alliance include the individualǿs name, PRQ results (raw and percentile) and other data collected on the PRQ.
- The only common data field in all datasets (and therefore the only way

to link and correlate the data) is “Name”.

- Sample DMs would incur risk if the following were to occur:
  - Company or public gain access to PRQ data for individuals; or
  - Company or public gain access to the consolidated dataset prior to de-identification; and
  - Company or public draws inferences and takes undue action based on knowledge of individual PRQ results or Company information.

Conflicts of Interest and sources of bias were also identified and the mitigation strategies employed are listed in Appendix B.

Research Design

Data collection and software. All data were collected from the various sources and compiled in MS-Excel. Sample demographics were analyzed in MS-Excel. Internal Reliability Testing, Exploratory Factor Analysis and Correlation Matrix development were conducted using SPSS v19 (SPSS, Inc., an IBM Company, 2010). The Structural Equation Modeling was conducted using LISREL v8.8 (Student Edition) (Jöreskog & Sörbom, 2006).

Demographic consistency. Once the data were compiled, various scenarios were developed using 2009 and 2010 dates for T_2 and T_3, as well as excluding / including the two selling teams that transitioned to behavior-based incentive plans in 2010. Demographic analysis of these various scenarios was conducted.

De-identification of the dataset. Once the demographic analysis was complete, all of the names were replaced with a randomly generated alphanumeric code. No key was retained, and all demographic data including name, district location, DMôs name, payroll number, race, age, gender and years of service were deleted from the dataset, per the IRB approved research plan. As a data security and safety measure, archived versions of the data were retained through the completion of the research then deleted.

Internal reliability testing. Both the Cronbach Alpha coefficient and the Cronbach Alpha (based on standardized items) coefficient, which assumes that all of the item variances in the scale are equal and is generally used when scales are comparable, were noted. In addition to analyzing the internal reliability of both the PRQ and the Skills Assessment, the researcher analyzed if and how the Cronbach Alpha would increase if a particular item were deleted.

Hypothesis testing and model development. The hypotheses, as well as the exploratory questions, were tested using Exploratory Factor Analysis (EFA) and Structural Equation Modeling (SEM). The conceptual model was further developed and tested as appropriate, based on the EFA and SEM results.

Exploratory Factor Analysis (EFA). All scenarios used PRQ data from February, 2009 and skills assessment data from July 2009. The 2009 sample of DMs and the 2010 sample were slightly different, but with considerable overlap in terms of the individuals included. Nonetheless, EFA was conducted on both samples to ensure the factor loading was consistent in the subsequent Structural Equation Modeling (SEM) analysis.

Exploratory Factor Analysis (EFA) – 1st Run. This analysis determined the number of factors onto which the PRQ and skills assessment variables load.

Exploratory Factor Analysis (EFA) – 2nd Run. This analysis determined how the PRQ and skills assessment variables load onto the factors found in the 1st run.

Structural Equation Modeling (SEM): SEM is a statistical technique that is used for testing and estimating the causal relationships of various variables using a combination of statistical and qualitative assumptions. SEM was used to determine the relationships between the Factors discovered in the EFA on each other, as well as *Sales Performance (financial)*, the dependent variable. The underlying variables associated with each factor were converted into Indicators, using a rule of thumb of three indicators per latent variable. Six SEM scenarios were run. The first two scenarios analyzed Q3/Q4 2009, with *Resilience* fully and partially mediated by *Managerial skills*, and the last four analyzed each quarter of 2010 using the fully mediated model only.

A correlation matrix, which included the data for the latent variable indicators and *Sales Performance (financial),* was developed for each scenario. The two 2009 scenarios used the same correlation matrix.

The resulting correlation matrix was then programmed into LISREL with the hands-on assistance, tutoring and guidance of the Thesis Advisor and First Reader, and two conceptual models were built. The first assumed full mediation of resilience by DM skills; the second assumed partial mediation and was used in the 2009 analysis only. These models are illustrated in the next chapter. In both cases, the factors discovered during the EFA became latent variables in the SEM analysis, *Sales Performance (financial)* was the dependent variable, and the indicators for each factor to be used in the SEM were derived from the EFA Pattern Matrix.

Structural Equation Modeling (SEM) Analysis. The SEM output was then analyzed to understand the relationship between PRQ scores, assessed DM skills and sales performance.

Correlations between Sales Performance (financial), Sales Performance (managerial) and Annual Performance Review ratings: A correlation matrix was generated for the associated measures for DMs who had all of the associated data, analyzed, and used to answer the last exploratory question.

Chapter 4

ANALYSIS OF RESEARCH FINDINGS

Sample Demographics

Not every District Manager (DM) employed during 2009 or 2010 took the Personal Resilience® Questionnaire (PRQ). The entire population of DMs employed during 2009 and 2010, as well as those meeting the inclusion criteria are characterized in Tables E-1 and E-2 of the Appendix E. The demographic makeup of the research sample (n=408 for 2009 performance; n=318 for 2010 performance) was generally consistent with the demographics of the total sample (n=590). The individuals in the 2009 sample remained generally consistent through the third and fourth quarters, and the individuals in the 2010 sample remained generally consistent through 2010.

Findings – Internal Reliability

Internal reliability of the PRQ. The internal reliability of the PRQ with the selected sample was tested. The sample analyzed was all DMs who took the PRQ regardless of when they took it. As noted in Table 10, the PRQ demonstrated high internal reliability, with an overall Cronbach Alpha (based on standardized items) coefficient of .805. In addition, only one characteristic, *Organized*, generated an increase in Cronbach Alpha if removed from the construct.

Table 10. PRQ Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.782	.805	7

Table 11. PRQ Inter-item Correlation Matrix

	Pos (W) - %	Pos (Y) - %	Foc - %	Flex (T) - %	Flex (S) - %	Org - %	Pro - %
Pos (W) - %	1.000	.612	.623	.306	.559	.228	.411
Pos (Y) - %	.612	1.000	.728	.301	.498	.318	.373
Foc - %	.623	.728	1.000	.264	.488	.384	.376
Flex (T) - %	.306	.301	.264	1.000	.355	-.115	.502
Flex (S) - %	.559	.498	.488	.355	1.000	.139	.383
Org - %	.228	.318	.384	-.115	.139	1.000	.070
Pro - %	.411	.373	.376	.502	.383	.070	1.000

Table 12. PRQ Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Pos (W) - %	422.12	8074.717	.667	.513	.724
Pos (Y) - %	414.94	8781.094	.698	.588	.733
Foc - %	423.44	8007.157	.697	.612	.718
Flex (T) - %	436.47	8671.473	.375	.326	.783
Flex (S) - %	423.35	8214.445	.583	.390	.739
Org - %	432.11	9389.619	.207	.207	.818
Pro - %	434.54	8073.092	.513	.345	.754

Internal reliability of the skills assessment. The internal reliability of the Skills Assessment with the selected sample was tested. The sample analyzed was all DMs who had 2009 skills assessment data. As noted in Table 13, the Skills Assessment demonstrated high internal reliability, with an overall Cronbach Alpha (based on standardized items) coefficient of .815. In addition, no characteristic generated an increase in Cronbach Alpha if removed from the construct, per Table 15.

Table 13. Skills Assessment Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.814	.815	5

Table 14. Skills Assessment Inter-Item Correlation Matrix

	09 Business Acumen	09 Delivering Results	09 Leading & Inspiring a Team	09 Building Accountability	09 Developing Talent
09 Business Acumen	1.000	.464	.413	.431	.413
09 Delivering Results	.464	1.000	.541	.498	.431
09 Leading & Inspiring a Team	.413	.541	1.000	.473	.554
09 Building Accountability	.431	.498	.473	1.000	.458
09 Developing Talent	.413	.431	.554	.458	1.000

Table 15. Skills Assessment Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
09 Business Acumen	12.91	8.034	.547	.304	.794
09 Delivering Results	12.91	7.292	.630	.407	.769
09 Leading & Inspiring a Team	12.86	7.249	.645	.441	.765
09 Building Accountability	13.02	7.434	.600	.362	.779
09 Developing Talent	13.04	8.031	.599	.380	.781

Exploratory Factor Analysis – 2009 DMs

Exploratory Factor Analysis (EFA) – 1st run findings. This analysis was conducted to determine number of factors onto which the PRQ and skills assessment variables load.

The standard deviation of the variables indicated that the data in this sample were adequately distributed, indicating differentiation among the sample. However, Table 16 illustrates that, compared to the rest of the people in the Company who have taken the PRQ, this sample of 2009 DMs scored on average 14.2% higher, and the standard deviation was on average 22.8% smaller. This sample was a relatively resilient and more homogeneous group than the Company at large. In addition, both the percent variance in eigenvalues in Table 17and the Scree plot in

Figure 2 indicated that all of the variables loaded onto three factors. To determine which variables load onto which of the three factors, a second EFA was run.

Table 16. EFA – 1st Run – 2009 DMs – Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Pos (W) - %	75.64	21.837	408
Pos (Y) - %	83.13	16.197	408
Foc - %	74.48	21.508	408
Flex (T) - %	60.98	25.389	408
Flex (S) - %	74.75	22.961	408
Org - %	65.95	25.907	408
Pro - %	63.92	26.240	408
09 Business Acumen	3.27	.843	408
09 Delivering Results	3.27	.937	408
09 Leading & Inspiring a Team	3.33	.933	408
09 Building Accountability	3.16	.933	408
09 Developing Talent	3.15	.795	408
Compared to all PRQ results in the Company worldwide, all functional areas & levels			
Pos (W) - %	62.11	28.25	4959
Pos (Y) - %	71.33	24.39	4959
Foc - %	60.63	27.53	4959
Flex (T) - %	53.22	28.86	4959
Flex (S) - %	62.26	28.03	4959
Org - %	59.69	28.62	4959
Pro - %	57.67	27.75	4959

Table 17. EFA – 1st Run – 2009 DMs – Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.690	30.754	30.754	3.133	26.108	26.108
2	2.732	22.765	53.519			
3	1.239	10.322	63.841			
4	.735	6.126	69.966			
5	.632	5.269	75.235			
6	.565	4.709	79.944			
7	.531	4.423	84.367			
8	.474	3.950	88.317			
9	.448	3.736	92.053			
10	.391	3.258	95.311			
11	.309	2.572	97.884			
12	.254	2.116	100.000			

Extraction Method: Principal Axis Factoring.

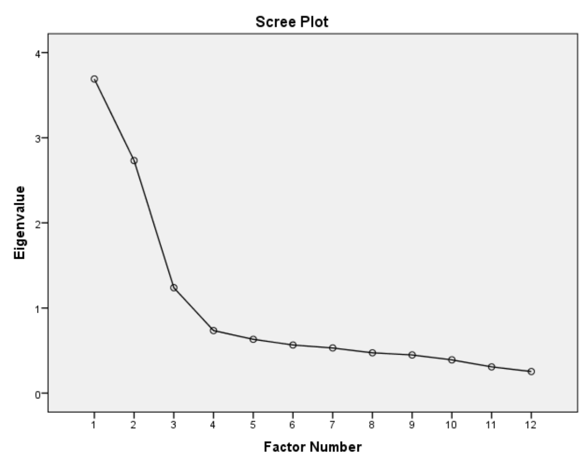

Figure 2. EFA – 1st Run – 2009 DMs – Scree Plot

<u>Exploratory Factor Analysis (EFA) – 2nd run findings.</u> This analysis was conducted to determine how the PRQ and skills assessment variables loaded onto the three factors found in the 1st run.

Table 18. EFA – 2nd Run – 2009 DMs – Pattern Matrix

	Factor		
	1	2	3
Pos (W) - %	.669	-.040	.174
Pos (Y) - %	.779	.001	.098
Foc - %	.890	.027	-.026
Flex (T) - %	-.137	-.003	.841
Flex (S) - %	.487	-.019	.284
Org - %	.602	.006	-.370
Pro - %	.185	.026	.560
09 Business Acumen	-.019	.618	-.018
09 Delivering Results	-.082	.706	.089
09 Leading & Inspiring a Team	.053	.735	-.008
09 Building Accountability	.082	.690	-.084
09 Developing Talent	-.041	.674	.036

Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 5 iterations.

The Pattern Matrix from the EFA (2nd run) indicated that all of the variables loaded onto one of the three factors with the following factor loading:

- Factor One: four of seven PRQ variables (*Positive (World), Positive (Yourself), Focused,* and *Flexible (Social))*

- Factor Two: all of the Skills Assessment variables
- Factor Three: two of seven PRQ variables (*Flexible (Thoughts)* and *Proactive*)
- *Organized* was deleted from the model because: a) the internal reliability would increase if it were deleted; b) it did not clearly load onto one factor; and c) the inter-item correlation matrix demonstrated that it did not have any significant correlation with any of the other resilience variables, indicating that the variance in *Organized* was unlikely to be explained by the same Factor.

Table 19. EFA – 2nd Run – 2009 DMs – Factor Correlation Matrix

Factor	1	2	3
1	1.000	.090	.536
2	.090	1.000	.189
3	.536	.189	1.000

The Factor Correlation Matrix indicated that these factors were distinct, with relatively low correlation to one another. There was some cross-correlation between Factors One and Three, the two resilience-related factors. This result was consistent with prior research, expected and acceptable, given the intent of the research was to understand the relationship of óresilienceô as an integrated construct on sales performance.

Table 20. Latent variables and underlying indicators for SEM analysis.

Latent variables and underlying indicators		Underlying variables in dataset
Factor One (Res1) *Resilient engagement*	**Res1A**	Mean of *Focused* and *Flexible (Social)*
	Res1B	*Positive (world)*
	Res1C	*Positive (yourself)*
Factor Three (Res2) *Fostering creative action*	**Res2A**	*Flexible (thoughts)*
	Res2B	*Proactive*
Factor Two (Skills) *Managerial skills*	**Skills1**	Mean of *Leading & inspiring a team* and *Business acumen*
	Skills2	Mean of *Delivering results* and *Developing talent*
	Skills3	*Building accountability*

The PRQ factor loading was consistent with earlier research as well as the synthesis of resilience constructs from the literature search. Taylor (1997) found that *Extroversion* correlated with all of the seven PRQ characteristics, *Agreeableness* with *Positive (World)* and Flexible (Social), *Contentiousness* with *Positive (World), Positive (Yourself), Focused, Flexible (Social),* and *Organized*, and *Openness to Experience* with *Flexible (Thoughts)* and *Proactive*. Combining Taylorôs findings with the synthesis of resilience literature and knowledge of the nature of the business environment in which DMs operate, the researcher characterized Factor One as *Resilient engagement*, and Factor Three as *Fostering creative action*. For this sample, resilience, as measured by the PRQ, was similar to, but not the same as, the Big 5 personality factors, because in addition to the Big 5 personality traits, *Resilient engagement* and *Fostering creative action* included clarity of purpose, self-efficacy and a bias for action. In addition, Altman Dautoff (2002) found that *Flexibility* and *Confidence to solve the problem* were significant contributors to team success, further supporting the construct for *Fostering creative action*. The researcher characterized Factor Two as *Managerial skills*.

The next step involved the development of indicators to include in Structural Equation Modeling, found in Table 20, by averaging, within each factor, the underlying variable with the highest and lowest coefficients in the Pattern matrix, then the second highest and second lowest, and so on, until all of the underlying variables that loaded onto that factor were accounted for. The rule of thumb was to have three indicators per factor. Therefore, *Resilient engagement* only required two underlying variables to be averaged to create an indicator, *Managerial skills* had two sets of ǻaveragedô indicators and *Fostering creative action* had no ǻaveragedô indicators.

<u>**Exploratory Factor Analysis – 2010 DMs**</u>

A second EFA, using the 2009 PRQ and skills data <u>applied to the 2010 DM sample</u>, was required to ensure that the factor loading was consistent between these samples, and subsequently to ensure that the Structural Equation Modeling (SEM) analysis for each of the time periods over 2009 and 2010 used consistent input. If the factor loading was different between the two samples, the SEM analyses for the two samples could not be compared.

<u>**Exploratory Factor Analysis (EFA) – 1st run findings.**</u> This analysis was conducted to determine the number of factors onto which the PRQ and skills assessment variables load.

Table 21. EFA – 1st Run – 2010 DMs – Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Pos (W) - %	75.75	22.262	318
Pos (Y) - %	83.41	16.366	318
Foc - %	74.81	21.607	318
Flex (T) - %	61.08	25.108	318
Flex (S) - %	74.45	22.719	318
Org - %	66.50	26.327	318
Pro - %	63.61	26.779	318
09 Business Acumen	3.44	.741	318
09 Delivering Results	3.46	.876	318
09 Leading & Inspiring a Team	3.51	.847	318
09 Building Accountability	3.37	.841	318
09 Developing Talent	3.30	.750	318
Compared to all PRQ results in the Company worldwide, all functional areas & levels			
Pos (W) - %	62.11	28.25	4959
Pos (Y) - %	71.33	24.39	4959
Foc - %	60.63	27.53	4959
Flex (T) - %	53.22	28.86	4959
Flex (S) - %	62.26	28.03	4959
Org - %	59.69	28.62	4959
Pro - %	57.67	27.75	4959

Table 22. EFA – 1st Run – 2010 DMs – Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.684	30.696	30.696	3.149	26.238	26.238
2	2.340	19.500	50.197			
3	1.290	10.754	60.951			
4	.841	7.009	67.960			
5	.719	5.995	73.955			
6	.639	5.321	79.276			
7	.576	4.796	84.072			
8	.499	4.161	88.233			
9	.479	3.989	92.222			
10	.418	3.483	95.705			
11	.284	2.366	98.071			
12	.232	1.929	100.000			

Extraction Method: Principal Axis Factoring.

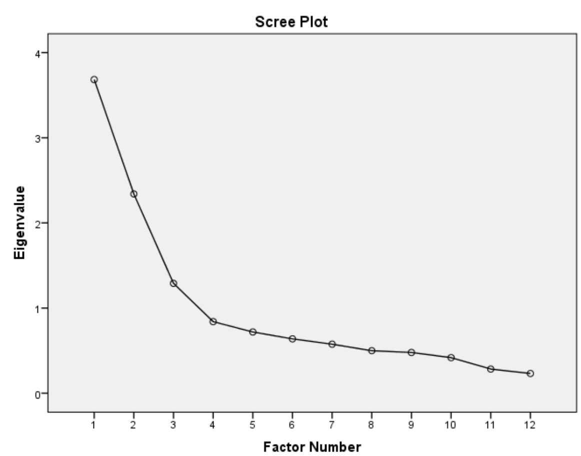

Figure 3. EFA – 1st Run – 2010 DMs – Scree Plot

The EFA for 2010 DMs was consistent with the EFA for 2009 DMs. Similar to the 2009 sample and, as shown in Table 21, the analysis yielded standard deviations of the variables that indicated similar differentiation within the sample, and as with the 2009 sample, when compared to the rest of the people in the Company who have taken the PRQ, this sample of 2010 DMs scored on average 16.9% higher, and the standard deviation was on average 17.0% smaller. The 2010 sample was even more resilient than the 2009 sample relative to the Company at large. In addition, both the percent variance in eigenvalues, included in Table 22, and the Scree plot, included as Figure 3, indicated that all of the variables load onto three factors. To determine if the same variables load onto the same three factors, a second EFA was run for this scenario.

Exploratory Factor Analysis (EFA) – 2nd run findings. This analysis was conducted to determine how the PRQ and skills assessment variables load onto the three factors.

The Pattern Matrix from the 2010 EFA, included as Table 23, indicated that all of the variables loaded onto three factors in the same manner as the 2009 EFA with the same factor loading. As with the 2009 EFA, *Organized* was deleted from the model.

Table 23. EFA – 2nd Run – 2010 DMs – Pattern Matrix

	Factor		
	1	2	3
Pos (W) - %	.711	-.001	.143
Pos (Y) - %	.788	-.020	.095
Foc - %	.913	.010	-.043
Flex (T) - %	-.122	-.029	.879
Flex (S) - %	.484	.029	.277
Org - %	.590	-.037	-.336
Pro - %	.198	.032	.554
09 Business Acumen	-.049	.454	.077
09 Delivering Results	-.084	.659	.071
09 Leading & Inspiring a Team	.032	.682	-.005
09 Building Accountability	.082	.627	-.162
09 Developing Talent	-.016	.604	.011

Extraction Method: Principal Axis Factoring. Rotation Method: Promax with Kaiser Normalization. Rotation converged in 5 iterations.

Table 24. EFA – 2nd Run – 2010 DMs – Factor Correlation Matrix

Factor	1	2	3
1	1.000	.144	.470
2	.144	1.000	.268
3	.470	.268	1.000

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.

Like the 2009 EFA, the 2010 Factor Correlation Matrix indicated that these factors were distinct, with relatively low correlation to one another. Therefore since the nature and magnitude of the factor loading was nearly identical, it was appropriate to compare the SEM results across the six scenarios.

<u>Structural Equation Modeling Findings</u>

Based on the findings and output from the EFA, a combined latent and measurement model was built for SEM analysis, per Figure 4. The linkage ɔ$_{1,1}$ was only applicable for the partial mediation scenario. The LISREL input matrices for all six scenarios are included in Appendix F. The ɚ parameter for one indicator for each of the latent variables was set to ñ1.0ò, allowing LISREL to estimate the other ɚ variables. Thus the underlying indicators labeled *Res1A, Res2A* and *Skills1* in the model had ɚ values arbitrarily set to 1.0. The model in Figure 4 is a slight modification to the original conceptual model proposed in Chapter 1 due to the division of ôResilienceò into two latent variables.

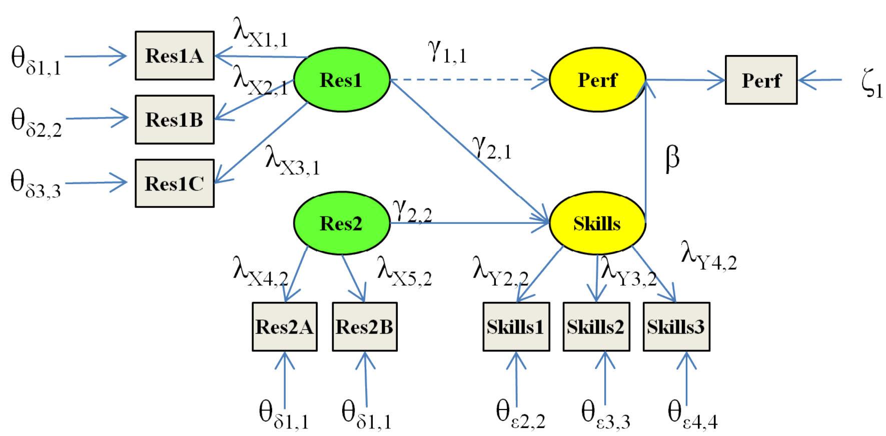

Figure 4. Combined Latent and Measurement Model

Goodness of Fit Analysis

The SEM Goodness of Fit output from all of the scenarios is provided in Table 25. Across all scenarios, the conceptual model fit the data well. In all cases, the Root Mean Square Error of Approximation (RMSEA) was less than .08, the selected fit indices were greater than .90, the chi-square P-value was greater than .05, and the G^2/d_f ratio was less than 2.0. The Goodness of Fit analysis indicated that the model fits the data, but did not necessarily mean that the model was an accurate explanation of causation.

Table 25. Goodness of Fit of the Model Across Six Scenarios

T_3 (timing of performance measurement)	d_f	G^2	P-value	G^2 / d_f	RMSEA	CFI	RFI
2009 (Q3/Q4) (fully mediated)	24	20.68	.66	.86	.00	1.00	1.00
2009 (Q3/Q4) (partially mediated)	23	20.57	.54	.89	.00	1.00	.98
2010 (Q1) (fully mediated)	24	26.20	.34	1.09	.02	1.00	.96
2010 (Q2) (fully mediated)	24	20.46	.67	.85	.00	1.00	.97
2010 (Q3) (fully mediated)	24	22.62	.54	.94	.00	1.00	.97
2010 (Q4) (fully mediated)	24	25.00	.41	1.04	.01	1.00	.97

d_f = degrees of freedom; χ^2 = Normal Theory Weighted Least Squares Chi-square; *RMSEA* = Root Mean Square Error of Approximation; *CFI* = Comparative Fit Index; *RFI* = Relative Fit Index

<u>Analysis of SEM Parameter Estimates and Standardized Solution Results</u>

<u>Scenario 1: *T_3* = 2009 (Q3/Q4) *Sales Performance (financial)* – fully mediated model.</u> Per Table 26 and Figure 5, the ə$_x$ t-values for the *Resilient engagement* and *Fostering creative action* indicators and the ə$_y$ t-values for the *Managerial skills* indicators indicated that all of the underlying indicators reflected the latent variables *Resilient engagement, Fostering creative action* and *Managerial skills*, respectively. In addition the t-values for ɓ and ɔ indicated a significant relationship between *Fostering creative action* and *Managerial skills* (ɔ=2.38), and between *Managerial skills* and *Sales Performance (financial)* (ɓ=2.47). But the relationship between *Resilient engagement* and *Managerial skills* (ɔ=-.48) was not significant. The correlation matrix between the latent variables indicated a R^2 = .41 between *Resilient engagement* and *Fostering creative action*, such that 41% of the variance in *Fostering creative action* could be explained by variance in *Resilient engagement*. For the 2010 sample, the R^2 = .36. Lastly, the óSquared multiple correlations for the structured equationsô results indicated that 4% of variance in *Managerial skills* is explained by *Resilience*, directly by *Fostering creative action* and indirectly by *Resilient engagement*, and 2% of the variance in *Sales Performance (financial)* can be explained by the model in which the effect of *Fostering creative action* is fully mediated by *Managerial skills*. The significance of these relationships was substantiated by ɔ=.22 (from the standardized solution) for *Fostering creative action* on *Managerial skills*, which indicated a moderate relationship, and a ɓ=.13 (from the standardized solution) for *Managerial skills* on *Sales Performance (financial)*, which indicated a slightly weaker relationship.

Table 26. SEM Results for T_3 = 2009 (Q3/Q4) *Sales Performance (financial)* – Fully Mediated Model

Latent variables & Underlying indicators	λ_x (estimate t-value*)	λ_y (estimate t-value*)	β (estimate t-value* / std soln)	γ (estimate t-value* / std soln)	**Squared multiple correlations for the structured equations****
Perf *–Sales performance (financial)*		***			.02
Res1 *- Resilient engagement*					
Res1A	***				
Res1B	18.71				
Res1C	19.15				
Res1 >> Skills				***-.48/-.04***	
Res2 - *Fostering creative action*					
Res2A	***				
Res2B	8.83				
Res2 >> Skills				2.38/.22	
Skills *- Managerial skills*					.04
Skills1		***			
Skills2		14.45			
Skills3		13.01			
Skills >> Perf			2.47/.13		

* t-value estimate >2.0 indicates relationship with variable is significant. Non-significant relationships indicated in bold italics

** *Squared Multiple Correlations for the Structured Equations* indicates the percent variance in the variable that is explained by the structured model.

*** λ for *Perf, Res1A, Res2A*, and *Skills1* set to 1.0. Other indicators estimated by LISREL.

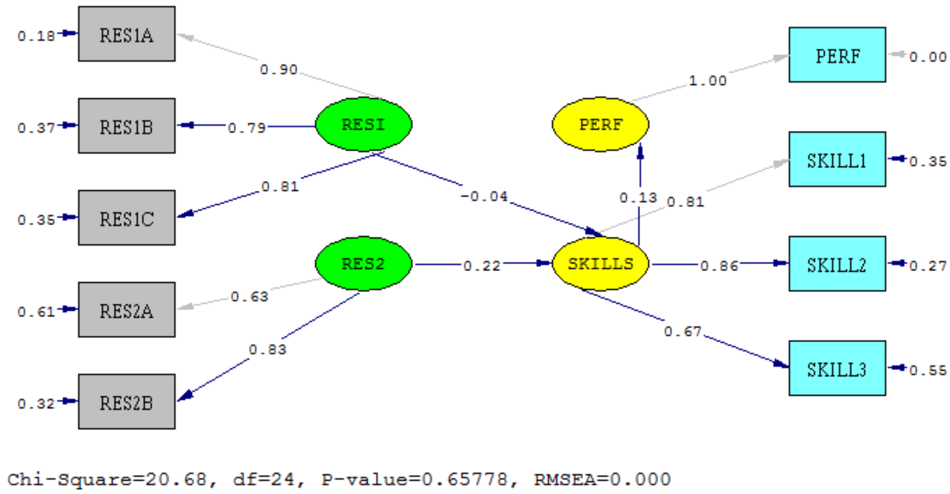

Figure 5. **Standardized Solution for 2009 (Q3/Q4) *Sales Performance (financial)* (fully mediated)**

<u>**Scenario 2: T_3 = 2009 (Q3/Q4) *Sales Performance (financial)* – partially mediated model.**</u> Per Table 27 and Figure 6, the SEM results for the partially mediated model were virtually identical to the fully mediated results. The additional piece of information was the t-value for ɔ between *Resilient engagement* and *Sales Performance (financial)*. In this case, ɔ=.35 indicated the direct relationship is not significant. Moreover, ɔ=.02 (from the standardized solution) for *Resilient engagement* on *Sales Performance (financial),* substantiating virtually no direct relationship. Thus the direct relationship between *Resilience* and *Sales Performance (financial)* in the model was not significant, indicating that *Resilience* was fully mediated by *Managerial skills*. This finding was supported by the previously noted

research of Peterson, Walumbwa, Byron and Myrowitz (2009) in which they found that *Positive psychological traits* (including resilience), mediated by high *Transformational leadership* behaviors, had a positive impact on the *Firm performance*, and the Wanberg and Banas (2000) findings that the impact of *personal resilience* on employeesô *job satisfaction, work irritation* and *intention to leave* was fully mediated by *Openness to change*, which was expressed as *Willingness to accept or accommodate the change* and *Positive view of the change***.** Therefore, subsequent SEM analyses for each quarter of 2010 only considered the fully mediated model.

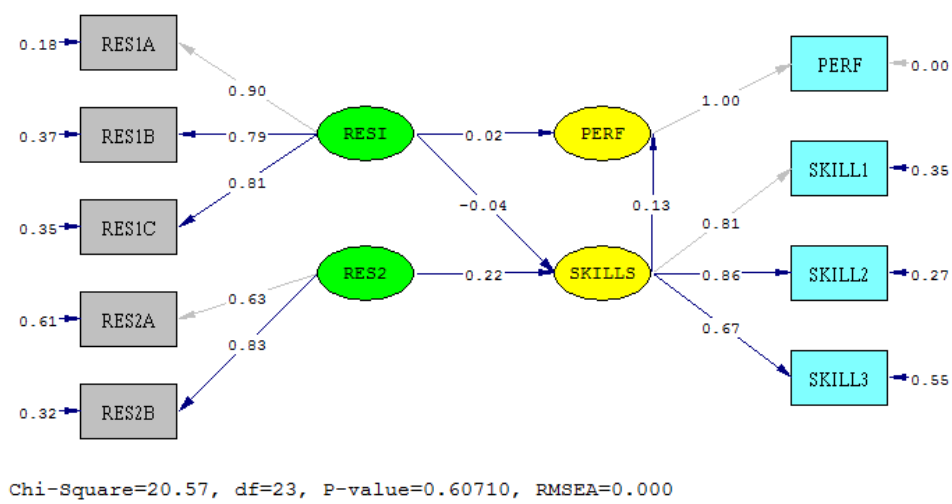

Figure 6. Standardized Solution for 2009 (Q3/Q4) *Sales Performance (financial)* (partially mediated)

Table 27. SEM Results for T_3 = 2009 (Q3/Q4) ***Sales Performance (financial)*** **– Partially Mediated Model**

Latent variables & Underlying indicators	λ_x (estimate t-value*)	λ_y (estimate t-value*)	β (estimate t-value* / std soln)	γ (estimate t-value* / std soln)	**Squared multiple correlations for the structured equations****
Perf *– Sales performance (financial)*		***			.02
Res1 *- Resilient engagement*					
Res1A	***				
Res1B	18.71				
Res1C	19.16				
Res1 >> Skills				***-.49/-.04***	
Res1 >>Perf				***.35/.02***	
Res2 ***-*** *Fostering creative action*					
Res2A	***				
Res2B	8.83				
Res2 >> Skills				2.38/.22	
Skills *- Managerial skills*					.04
Skills1		***			
Skills2		14.45			
Skills3		13.01			
Skills >> Perf			2.47/.13		

* t-value estimate >2.0 indicates relationship with variable is significant. Non-significant relationships indicated in bold italics

** *Squared Multiple Correlations for the Structured Equations* indicates the percent variance in the variable that is explained by the structured model.

*** λ for *Perf, Res1A, Res2A*, and *Skills1* set to 1.0. Other indicators estimated by LISREL.

Scenario 3: T_3 = 2010 (Q1) *Sales Performance (financial)* – fully mediated model. Per Table 28 and Figure 7, the λ_x t-values for the *Resilient engagement* and *Fostering creative action* indicators and the λ_y t-values for indicators of *Managerial skills* showed that all of the underlying indicators reflected the latent variables *Resilient engagement, Fostering creative action* and *Managerial skills*, respectively. It should be noted that in all four 2010 scenarios, *Resilience* was measured in February, 2009 and *Managerial skills* were assessed in July 2009. The difference was the time in which performance was measured (T_3). In the previous two scenarios, performance was measured in Q3/Q4, 2009. In this and subsequent scenarios, performance was measured in each of the four quarters of 2010. A key difference in the SEM output for T_3=2010 (Q1) (fully mediated) was that the t-value for β for the relationship between *Managerial skills* and *Sales Performance (financial)* was no longer significant (β=.02). Moreover, the “Squared multiple correlations for the structured equations” results indicated that while 6% of variance in *Managerial skills* was explained by *Resilience*, directly by *Fostering creative action* and indirectly by *Resilient engagement*, and the variance in *Sales Performance (financial)* that can be explained by the model had reduced from 2% in 2009 (Q3/Q4) to 0%. This finding was substantiated by the β (from the standardized solution) effect of *Managerial skills* on *Sales Performance (financial)* reducing from an already small .13 in 2009 (Q3/Q4) to .00 in 2010 (Q1). Thus in the quarter during and immediately following the major organizational change, the relationship between DM *Resilience/Managerial skills* and *Sales Performance (financial)* was no longer statistically significant.

Table 28. SEM Results for T_3 = 2010 (Q1) *Sales Performance (financial)* – Fully Mediated Model

Latent variables & Underlying indicators	λ_x (estimate t-value*)	λ_y (estimate t-value*)	β (estimate t-value* / std soln)	γ (estimate t-value* / std soln)	**Squared multiple correlations for the structured equations****
Perf *– Sales performance (financial)*		***			***.00***
Res1 *- Resilient engagement*					
Res1A	***				
Res1B	17.32				
Res1C	17.24				
Res1 >> Skills				***.10/.01***	
Res2 ***-*** *Fostering creative action*					
Res2A	***				
Res2B	7.67				
Res2 >> Skills				2.49/.25	
Skills *- Managerial skills*					.06
Skills1		***			
Skills2		9.30			
Skills3		8.57			
Skills >> Perf			***.02/.01***		

* t-value estimate >2.0 indicates relationship with variable is significant. Non-significant relationships indicated in bold italics

** *Squared Multiple Correlations for the Structured Equations* indicates the percent variance in the variable that is explained by the structured model.

*** λ for *Perf, Res1A, Res2A*, and *Skills1* set to 1.0. Other indicators estimated by LISREL.

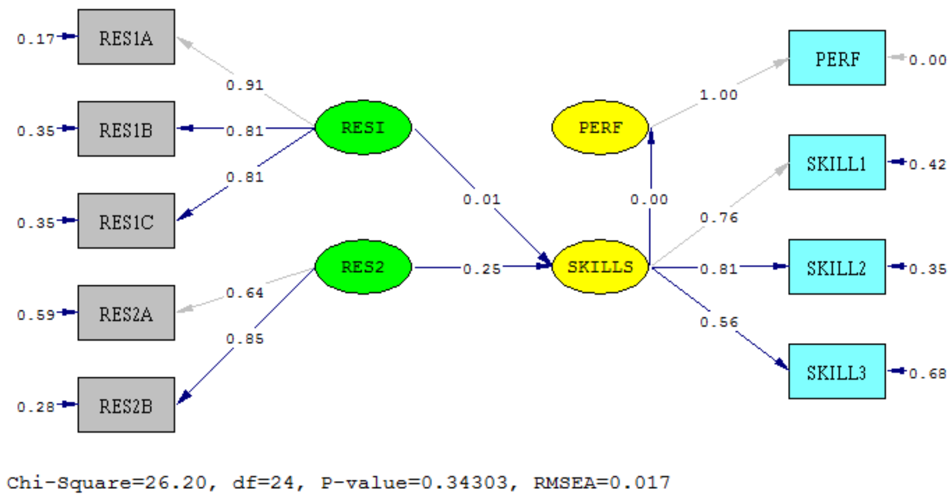

Figure 7. **Standardized Solution for 2010 (Q1) *Sales Performance (financial)* (fully mediated)**

<u>Scenario 4: T_3 = 2010 (Q2) *Sales Performance (financial)* – fully mediated model.</u> Per Table 29 and Figure 8, the situation in 2010 (Q2) was little changed from Q1. The underlying indicators all reflected the latent variables. And the t-value for ϐ for the relationship between *Managerial skills* and *Sales Performance (financial)* was still not significant (ϐ=.72). The variance in *Sales Performance (financial)* that could be explained by the model was still 0%. The relationship between DM *Resilience/Managerial skills* and *Sales Performance (financial)*, evident in 2009, was not significant in Q2, 2010.

Table 29. SEM Results for T_3 = 2010 (Q2) *Sales Performance (financial)* – Fully Mediated Model

Latent variables & Underlying indicators	**λ_x** (estimate t-value*)	**λ_y** (estimate t-value*)	**β** (estimate t-value* / std soln)	**γ** (estimate t-value* / std soln)	**Squared multiple correlations for the structured equations****
***Perf** – Sales performance (financial)*		***			**.00**
***Res1** - Resilient engagement*					
Res1A	***				
Res1B	17.32				
Res1C	17.24				
Res1 >> Skills				***.11/.01***	
***Res2** - Fostering creative action*					
Res2A	***				
Res2B	7.67				
Res2 >> Skills				2.49/.25	
***Skills** - Managerial skills*					.06
Skills1		***			
Skills2		9.31			
Skills3		8.57			
Skills >> Perf			***.72/.05***		

* t-value estimate >2.0 indicates relationship with variable is significant. Non-significant relationships indicated in bold italics

** *Squared Multiple Correlations for the Structured Equations* indicates the percent variance in the variable that is explained by the structured model.

*** λ for *Perf, Res1A, Res2A*, and *Skills1* set to 1.0. Other indicators estimated by LISREL.

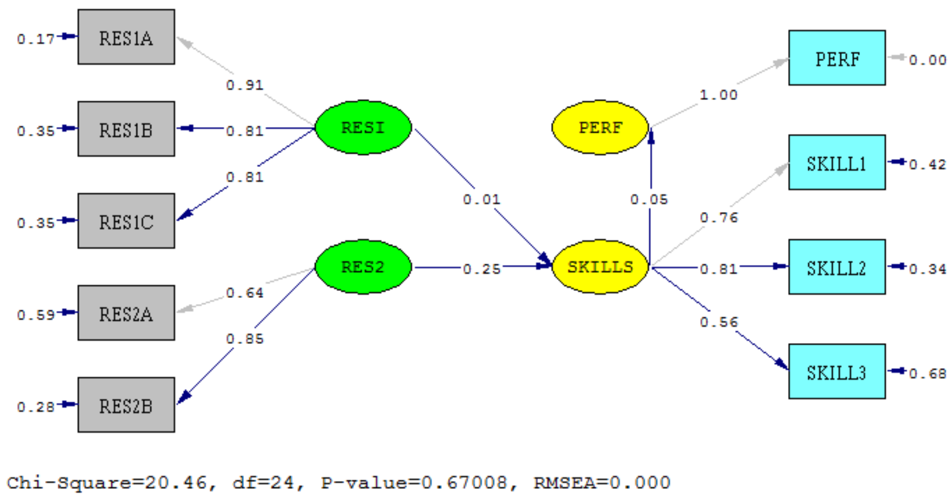

Figure 8. **Standardized Solution for 2010 (Q2) *Sales Performance (financial)* (fully mediated)**

Scenario 5: T_3 = 2010 (Q3) *Sales Performance (financial)* – fully mediated model. Per Table 30 and Figure 9, the situation in 2010 (Q3) was similar to the previous quarters. The underlying indicators all reflected the latent variables. The t-value for ɓ for the relationship between *Managerial skills* and *Sales Performance (financial)* was still not significant (ɓ=-.15). The variance in *Sales Performance (financial)* that could be explained by the model was still 0%. The relationship between DM *Resilience/Managerial skills* and *Sales Performance (financial)*, evident in 2009, was not significant in Q3, 2010.

Table 30. SEM Results for T_3 = 2010 (Q3) *Sales Performance (financial)* – Fully Mediated Model

Latent variables & Underlying indicators	λ_x (estimate t-value*)	λ_y (estimate t-value*)	β (estimate t-value* / std soln)	γ (estimate t-value* / std soln)	**Squared multiple correlations for the structured equations****
Perf* – *Sales performance (financial)		***			**.00**
Res1 - *Resilient engagement*					
Res1A	***				
Res1B	17.32				
Res1C	17.24				
Res1 >> Skills				***.11/.01***	
Res2 - *Fostering creative action*					
Res2A	***				
Res2B	7.67				
Res2 >> Skills				2.49/.25	
Skills - *Managerial skills*					.06
Skills1		***			
Skills2		9.30			
Skills3		8.57			
Skills >> Perf			***-.15/-.01***		

* t-value estimate >2.0 indicates relationship with variable is significant. Non-significant relationships indicated in bold italics
** *Squared Multiple Correlations for the Structured Equations* indicates the percent variance in the variable that is explained by the structured model.
*** λ for *Perf, Res1A, Res2A*, and *Skills1* set to 1.0. Other indicators estimated by LISREL.

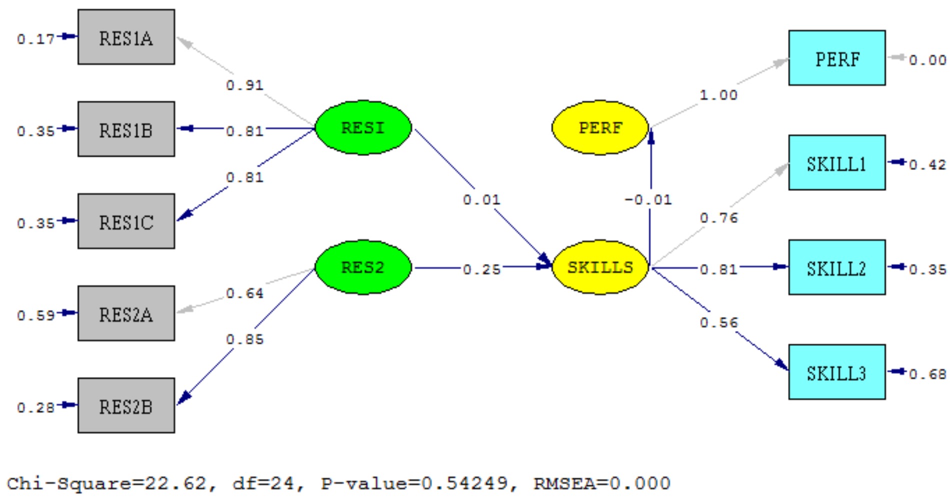

Figure 9. Standardized Solution for 2010 (Q3) *Sales Performance (financial)* (fully mediated)

<u>Scenario 6: T3 = 2010 (Q4) *Sales Performance (financial)* – fully mediated model.</u> Per Table 31 and Figure 10, the fourth quarter of 2010 marked the reestablishment of the positive relationship between *Resilience*, fully mediated by *Managerial skills*, and *Sales Performance (financial)* and indeed resembled the 2009 (Q3/Q4) fully mediated SEM results. As in the previous scenarios, the underlying indicators all reflected the latent variables. The t-values for ϐ and ɔ indicated a significant relationship between *Fostering creative action* and *Managerial skills* (ɔ=2.52), and between *Managerial skills* and *Sales Performance (financial)* (ϐ=2.21). The relationship between *Resilient engagement* and *Managerial skills* (ɔ=-.10) was not significant in any of the scenarios. As mentioned previously, the correlation coefficient (R^2) between *Resilient engagement* and *Fostering creative action* was .41 in 2009 and .36 in 2010, indicating that while *Resilient engagement* did not have a direct relationship with *Managerial skills*, it is likely indirect. Lastly, the óSquared multiple correlations for the structured equationsô results indicated that 7% of variance in *Managerial skills* was explained by *Resilience*, directly by *Fostering creative action* and indirectly by *Resilient engagement* and, like the 2009 scenario, 2% of the variance in *Sales Performance (financial)* could be explained by the model in which the effect of *Fostering creative action* is fully mediated by *Managerial skills*. This finding was substantiated by ɔ=.25 (from the standardized solution) for *Fostering creative action* on *Managerial skills*, which indicated a moderate relationship, and a ɓ=.14 (from the standardized solution) for *Managerial skills* on *Sales Performance (financial)*, which indicated a slightly weaker relationship.

Table 31. SEM Results for T_3 = 2010 (Q4) *Sales Performance (financial)* – Fully Mediated Model

Latent variables & Underlying indicators	**λ_x** (estimate t-value*)	**λ_y** (estimate t-value*)	**β** (estimate t-value* / std soln)	**γ** (estimate t-value* / std soln)	**Squared multiple correlations for the structured equations****
***Perf** – Sales performance (financial)*		***			.02
***Res1** - Resilient engagement*					
Res1A	***				
Res1B	17.32				
Res1C	17.24				
Res1 >> Skills				***.10/.01***	
***Res2** - Fostering creative action*					
Res2A	***				
Res2B	7.68				
Res2 >> Skills				2.52/.25	
***Skills** - Managerial skills*					.07
Skills1		***			
Skills2		9.38			
Skills3		8.59			
Skills >> Perf			2.21/.14		

* t-value estimate >2.0 indicates relationship with variable is significant. Non-significant relationships indicated in bold italics
** *Squared Multiple Correlations for the Structured Equations* indicates the percent variance in the variable that is explained by the structured model.
*** λ for *Perf, Res1A, Res2A*, and *Skills1* set to 1.0. Other indicators estimated by LISREL.

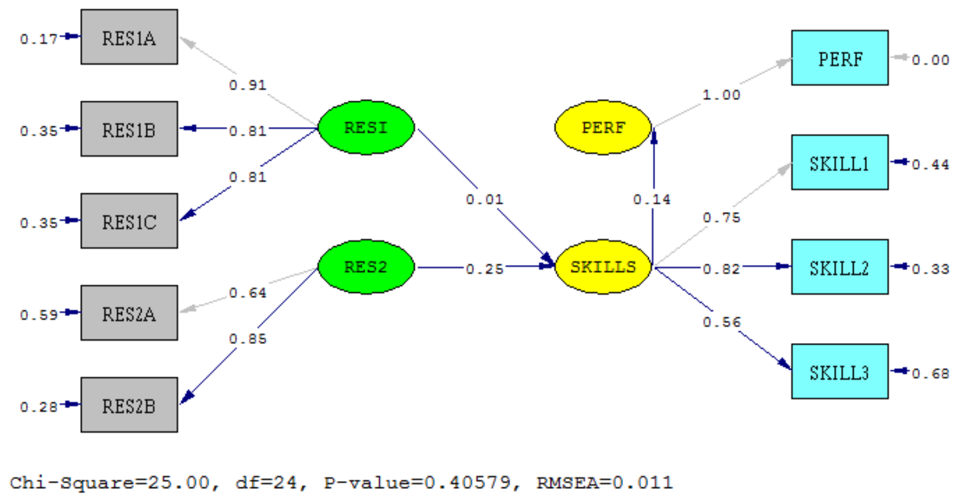

Figure 10. **Standardized Solution for 2010 (Q4)** ***Sales Performance (financial)*** **(fully mediated)**

Analysis of Correlation between 2009/2010 *Sales Performance (financial), Sales Performance (managerial)* and *Annual Performance Review Ratings*

For this analysis, each DMôs quarterly scores for *Sales Performance (managerial)* and *Sales Performance (financial)* were averaged and compared to their *Annual Performance Review* rating. Per Table 32, the strongest correlations were between the same-year *Performance Review rating* and the associated *Sales Performance (managerial)* rating (r_{2009}=.84 and r_{2010}=.68). Same-year correlations between these subjective performance measures, and *Sales Performance (financial)* were statistically significant, but weak (for 2009, r=.19 and .17 respectively, and for 2010, r=.40 and .28 respectively). Cross-year, there was no statistical correlation between subjective performance measures and the *Sales Performance (financial)* for the other year. This finding was neither surprising, nor particularly enlightening. The data underlying *Sales Performance (financial)* were tracked and reported throughout the year and officially reported quarterly. The Regional Director (RD) tracked this financial data while also conducting quarterly assessments of progress against managerial objectives and conducting the annual performance review. The criteria for the *Performance Review* and *Sales Performance (managerial)* were nearly the same. That these ratings could become muddled was not unexpected. With setting of new objectives and targets at the beginning of each year, the slate was effectively wiped clean. Therefore little correlation year-to-year was expected.

Table 32. 2009/2010 Correlation Matrix: *Sales Performance (financial)*, Sales *Performance (managerial)* and *Annual Performance Review Ratings*

		2009 Performance Review rating	2009 average qtrly Sales Performance (managerial)	2009 average qtrly Sales Performance (financial)	2010 Performance Review rating	2010 average qtrly Sales Performance (managerial)	2010 average qtrly Sales Performance (financial)
2009 Performance Review rating	Pearson Correlation	1	.84**	.19**	.22**	.24**	.01
	Sig. (2-tailed)		.00	.001	.000	.000	.91
	Sum of Squares and Cross-products	159.22	2623.35	566.61	35.02	836.39	9.12
	Covariance	.50	8.20	1.71	.101	2.61	.03
2009 average qtrly Sales Performance (managerial)	Pearson Correlation	.84**	1	.17**	.24**	.27**	-.01
	Sig. (2-tailed)	.00		.00	.00	.00	.82
	Sum of Squares and Cross-products	2623.35	61024.10	9904.16	745.01	18135.83	-361.86
	Covariance	8.20	190.70	30.95	2.33	56.67	-1.13
2009 average qtrly Sales Performance (financial)	Pearson Correlation	.19**	.17**	1	.03	.10	.30**
	Sig. (2-tailed)	.00	.00		.64	.07	.00
	Sum of Squares and Cross-products	566.61	9904.16	56953.85	78.10	6784.93	8163.21
	Covariance	1.77	30.95	177.98	.24	21.20	25.51
2010 Performance Review rating	Pearson Correlation	.22**	.24**	.03	1	.68**	.40**
	Sig. (2-tailed)	.00	.00	.64		.00	.00
	Sum of Squares and Cross-products	35.02	745.01	78.10	155.88	2339.49	571.28
	Covariance	.11	2.33	.24	.49	7.31	1.79
2010 average qtrly Sales Performance (managerial)	Pearson Correlation	.24**	.27**	.10	.68**	1	.28**
	Sig. (2-tailed)	.00	.00	.07	.00		.00
	Sum of Squares and Cross-products	836.39	18135.83	6784.93	2339.49	75810.31	8758.98
	Covariance	2.61	56.67	21.20	7.31	236.91	27.37
2010 average qtrly Sales Performance (financial)	Pearson Correlation	.01	-.01	.30**	.40**	.28**	1
	Sig. (2-tailed)	.91	.82	.00	.00	.00	
	Sum of Squares and Cross-products	9.12	-361.86	8163.21	571.28	8758.98	13018.71
	Covariance	.03	-1.13	25.51	1.79	27.372	40.683

**. Correlation is significant at the 0.01 level (2-tailed). N=321

Hypotheses, Exploratory Questions and Findings

Hypothesis #1: The resilience of District Managers (DMs) has a positive effect on assessed managerial skills. In every scenario, *Fostering creative action* had a positive, statistically significant though moderate, relationship with DM *Managerial skills* (ɔ from the standardized solution ranged from .22 to .25, and the model explained 4% to 7% of variance in *Managerial skills*). In addition, in every scenario, the ɔ t-value for *Fostering creative action* was greater than 2.0. Conversely, *Resilient engagement* did not have a direct relationship with *Managerial skills*. In every scenario, the t-value for ɔ for *Resilient engagement* was less than 2.0.

***Conclusion*: Hypothesis #1 was partially supported.** Only *Fostering creative action* has a DIRECT positive relationship with the DM *Managerial skills*. *Resilient engagement* does not have a significant relationship with DM *Managerial skills.*

Hypothesis #2: The managerial skills of DMs have a direct positive effect on the sales performance of their teams. For Q3/Q4 of 2009, which occurred after resilience and skills were assessed, the t-value of ϐ=2.47 and the standardized solution of ϐ=.13 indicated a weak, though statistically significant positive relationship between *Managerial skills* and *Sales Performance (financial)*. In addition, the SEM results indicated that 2 % variance in *Sales Performance (financial)* is explained by the structured model.

***Conclusion*: Hypothesis #2 was supported.** The *Managerial skills* of DMs have a direct positive relationship with the *Sales Performance (financial)* of their teams.

<u>Hypothesis #3:</u> The managerial skills of DMs mediate the effect their resilience has on the sales performance of their teams. <u>Hypothesis #4:</u> The resilience of DMs has a direct positive effect on the sales performance of their teams. In the 2009 partially mediated model, the ɔ t-value for the *Resilient engagement-Sales Performance (financial)* pair was not significant (ɔ=.35). In the 2009 fully and partially mediated scenarios, the Squared Multiple Correlations for the Structured Equations value for *Sales Performance (financial)*, which is the percent variance that is explained by the model, did not change when partial mediation was allowed, which indicated that *Managerial skills* fully mediate the effect of *Resilience* on *Sales Performance (financial)*.

***Conclusions*: Hypothesis #3 was supported. Hypothesis #4 was not supported.** *Managerial skills* fully mediate the effect of *Resilience* on *Sales Performance (financial)* and therefore the Resilience of DMs does not have a DIRECT positive relationship with the *Sales Performance (financial)* of their teams. Given the findings from Hypothesis #1 however, there is an INDIRECT relationship, because *Fostering creative action* has a DIRECT positive relationship with the DM *Managerial skills*.

<u>Exploratory question #1:</u> Are DM skills and DM resilience the same thing? The Pattern Matrix from the Exploratory Factor Analysis indicated that all of the *Managerial skills* items loaded only onto the same factor, with statistically insignificant loading onto the other two. The Personal Resilience® Questionnaire (PRQ) characteristics loaded onto *Resilient engagement* and *Fostering creative action*, with statistically insignificant loading onto *Managerial skills*. In addition, the inter-item correlation coefficients were nearly zero between *Managerial skills* and the two resilience-related factors. Lastly, the SEM analysis demonstrated that *Managerial skills* fully mediated *Resilient engagement* and *Fostering creative action*. Given the nature of the relationship between the DM and the sales rep, the face validity of this finding was clear. *Resilient engagement* and *Fostering creative action* refer to the personal attitudes, preferences and behaviors of the DM. But for DMs to transfer these attitudes, preferences and behaviors to their sales reps, they have to be brought to life through tangible actions to generate superior performance within a sales team, which are the key activities underpinning the list of skills assessed.

***Answer:* DM skills and DM resilience are not the same thing.**

<u>**Exploratory question #2:**</u> **Do subjective DM performance reviews, specifically Annual Performance Reviews and the Managerial (leadership) component of sales incentive process, correlate to sales performance?** As previously mentioned, the same-year correlation between all three measures was an expected outcome, since these subjective reviews were conducted by the same RD for each DM, with the financial results known throughout both subjective evaluation cycles. The correlation within the same year was weak to moderate, with the Pearsonǒs coefficient ranging from .17 to .40. But the cross correlations between the

subjective performance reviews and *Sales Performance (financial)* in the opposite year were not significant, with the Pearsonôs coefficient ranging from -.01 to .10. This lack of cross-year correlation was also not surprising either, as objectives and targets (financial and managerial) are reset in January of each year.

Answer: *Annual Performance Review* ratings and *Sales Performance (managerial)* ratings do correlate with *Sales Performance (financial)* within the same-year, but do not correlate across years.

<u>**Exploratory question #3:**</u> **How long after a disruptive change does it take to reestablish the positive effect high DM resilience has, working though a value delivery system, on organizational outcomes (e.g., the achievement of sales targets)?** One of the assumptions in this thesis was that the Company was <u>relatively</u> stable in the last half of 2009. During that timeframe, DM *Resilience*, fully mediated by *Managerial skills*, accounted for 2% of the variance in *Sales Performance (financial)*. After the changes of January 2010, this relationship became insignificant. In the first three quarters, the t-values for б were .02, .72 and -.15 for each quarter respectively, and the percent variance in *Sales Performance (financial)* that was explained by the structured model was 0%. This situation held until the fourth quarter of 2010, when once again the relationship became significant, and the percent variance in *Sales Performance (financial)* that was explained by the structured model returned to 2%. What actually happened in the first three quarters of 2010 was not examined. Did DMs become disrupted themselves and have a non-resilient response for a period of time before bouncing back? How long did it take for newly assigned sales reps to

reap the rewards of their DMôs resilience? Further down the value chain, how long did it take sales reps to establish new relationships with new Healthcare Professionals (HCPs)? What other environmental factors impacted the sales force? Did the healthcare debate which occurred throughout 2010 in the U.S. affect sales overall? None of these individual components that together would have impacted the organizationôs collective ôbounce backô were examined, nor were the details of how the organizational change was implemented. What was shown by the research was that effect of the model proposed herein on *Sales Performance (financial)* was significant in Q3/Q4, 2009, was not significant in the first three quarters of 2010, and in Q4, 2010, the effect was the same as it was in the last half of 2009. The ß t-value from Q4, 2010 was 2.21, ß in the standardized solution was a weak but significant .14 and once again 2% of the variance in *Sales Performance (financial)* was explained by the structured model.

Answer: In this case, DM *Resilience*, fully mediated by *Managerial skills*, had a positive and statistically significant relationship with *Sales Performance (financial)* before a major organizational change. That relationship was not statistically significant in the three quarters after the major change, and became statistically significant again in the fourth quarter after the change.

Chapter 5

DISCUSSION AND RECOMMENDATIONS

Summary of Approach

Data collection. Data were collected from sources within the Company. (The Company opted to remain anonymous.) The data collected included *Performance Review ratings*, *Skills Assessments* and *Sales Performance (financial and managerial)* for District Managers (DMs) in the U.S. sales organization from 2009 and 2010. Personal Resilience® Questionnaire (PRQ) data were provided by Resilience Alliance. In addition, demographic information was collected and used to characterize the sample (and subsequent subsets), but not analyzed. Inclusion criteria were applied to ensure that all of the required data were available in the dataset for DMs in the sample. The principle variables were *PRQ* data, which was collected in February, 2009), *Skills Assessment* data, which was collected in July, 2009, and *Sales Performance* data for Q3/Q4 of 2009 and each quarter of 2010.

Data analysis.

Reliability testing. Internal reliability testing was conducted on the *PRQ* and *Skills* constructs and both found to be internally consistent.

Exploratory Factor Analysis (EFA). The EFA determined that in every scenario, the latent indicators loaded onto three factors. Based on the nature of the underlying variables, those factors were named: *Resilient engagement, Fostering creative action* and *Managerial skills*. In addition, correlation matrices for Q3/Q4 and each of the quarters in 2010 which examined the correlation between *Sales Performance (financial)* in that particular time period and the latent variable indicators were developed and analyzed.

Structural Equation Modeling (SEM). The correlation matrices, factors and underlying indicators were then used to construct the combined latent and measurement model. The first one assumed that *Resilient engagement* and *Fostering creative action* were fully mediated by *Managerial skills;* the second assumed they were partially mediated. Both the partial and fully mediated models were run for 2009. Only the fully mediated model was run for the 4 quarters in 2010.

Correlating Performance Review ratings, Sales Performance (managerial) and Sales Performance (financial). A correlation matrix for the aforementioned measures of performance for 2009 and 2010 was created and analyzed.

Limitations

Some of the limitations of this research were discussed in Chapter 1. Those limitations and additional factors impacting this research can be summarized as:

- The PRQ is a self-administered online assessment and assumes that respondents are both sufficiently self-aware and trust the confidentiality of the PRQ administration to answer accurately and honestly about themselves.

- Other factors, unrelated to resilience and skills, likely contributed significantly to sales performance including, but not limited to, changes to insurance plans in the sales district, legislative/regulatory changes, competitor drug entry/exit, changes to the product portfolio, changes to territory/district structure, significant turnover of sales reps, and changes to sales call processes or strategies.
- The researcher did not have the opportunity to investigate cause-and-effect (e.g., why some managers were more resilient or got better results, or how resilience and/or skills actually translated into results).
- The researcher did not analyze sales rep (i.e., members of the DMȢs team) performance, resilience, skills or turnover, which could have significantly impacted district-level performance.
- Performance reviews and skills assessments are ultimately human, and therefore subjective, measures which are subject to a number of factors including grader bias and preferences (e.g., fundamental attribution error, recency effect, or anchoring), grader experience, and understanding of the calibration process.
- Performance against sales targets across selling teams or regions may not have always reflected the actual performance of individual DMs due to undetected imperfections in the target setting and adjustment process.
- The sample in this study was comprised of DMs and numbered roughly 10% of the total number of people in the Company who had completed the PRQ. The DMs in this sample were abnormally resilient relative to others in the

Company. Moreover, the standard deviation for this group was significantly smaller than the Company at large. In fact, the Company intentionally staffs people into these roles who already demonstrate most of the core resilient behaviors. Thus, the relatively small variability in the independent variable (resilience) would make it more difficult to discern differentiated impact on *Sales Performance (financial)*, the dependent variable.

- The Researcher could not interview DMs to further understand other factors which impacted them in 2010.

Perhaps the most significant constraint was the Resilience-Results Pathway and the nature of personal resilience. The PRQ is an instrument that measures personal resilience and characterizes how an individual DM reacts to change personally. That is, how optimistic, self-confident, focused, flexible, outgoing, organized and experimenting are they personally in the face of change? The DMs interacted in a meaningful way with individual sales reps in six hour ride-alongs every two weeks. During this interaction, the DMôs personal resilience had to órub offô on the sales rep, and make a significant enough impact to stick with the rep through subsequent sales calls with HCPôs, and survive through a series of other exchanges to ultimately result in a prescription being filled and a sale recorded. Given the series of exchanges that occur in this system, it is remarkable that the model tested had a statistically significant, though small effect on *Sales Performance (financial)*.

Discussion and Implications

The findings from the hypotheses tested in this research may have nuanced but significant implications for pharmaceutical companies, or indeed any company with significant consultative selling functions. Firstly, the research showed that resilience, particularly those aspects of resilience related to creativity and action planning, in combination with solid managerial skills, is an important part of the ability of a sales manager to deliver top line results through his or her sales team. The variance in *Fostering creative action* explained 4-7% of the variance in *Managerial skills*, and *Resilience,* mediated by *Managerial Skills,* explained 2% of the variance in *Sales Performance (financial)*. *Resilient engagement* did not have a significant relationship to *Managerial Skills*. The indicators that loaded onto *Resilient engagement* were mostly intra-personal It is therefore possible that *Resilient engagement* may play a significant role for the District managerõs (DMõs) ability to internally processing dynamic situations, as well as to create a positive, productive environment during sales rep ride-alongs. But what makes a statistically significant difference to top line results, mediated by the DMõs *Managerial skills*, is the DM *Fostering creative action* with the sales rep. Secondly, the research showed that the resilience alone is not predictive of sales results. It must be accompanied by solid managerial skills in order to impact top line revenue. In other words, the resilience of sales managers makes a difference. In addition, Colgate (1995) concluded that resilience is in fact a developmental process versus a static trait or state of being, and thus can change (i.e., be developed) over time. (pp. 17-18). The implication is that investment in developing the resilience and resilient behaviors of sales managers, particularly in innovative thinking and action learning, should be considered, especially if it is integrated with other sales manager skills and skills training. This implication is supported by other research.

Waite & Richardson (2004) studied the efficacy of a resilience training program, which consisted of five 8-hour modules, and the study consisted of 123 training participants and a control group of 109 participants who did not attend training. Participants were surveyed before the program began, immediately upon completion of the program and 10 weeks after the program. One hundred and fifty people took all three surveys and this sample provided the data analyzed. Seventy three were training participants and 77 were control group participants. The researchers used a survey consisting of 77 items to measure resilience, self-esteem, locus of control, purpose in life, interpersonal relations and job satisfaction. The researchers found that, with the exception of job satisfaction, the program created positive movement in the study variables with the training participants. The lack of impact on job satisfaction was attributed to the timing of the program, which coincided with the busiest time of the year in the organization studied. With the exception of locus of control, the study variables did not change significantly between program completion and 10 weeks after completion. In other words, the positive effect was maintained. This sustained impact was attributed to follow-up sessions with managers after the program.

Adaptiv Training developed a resilience training program based on the Resilience Factor Inventory® that focused on seven key skills to build the personal resilience of participants. Participants from Edward Jones Investments subsequently outperformed peers in ñtotal client assets under managementò and ñgross commissionò 2:1 one, three and nine months after the program. After completing the program with 15 customer service representatives, Sprint concluded that a program for 15 participants could increase CSR productivity by 17,250 calls per year. (Jackson & Watkin, 2004)

These examples illustrate the potential of comprehensive training in resilience to enhance productivity. In the cited cases, there was a significant investment of time in training, and in the case of Waite & Richardson (2004), including 40 hours of classroom training which was accompanied by manager follow-up sessions.

The answers to the exploratory questions lead to additional implications. The first finding was that resilience is not the same as traditional manager skills (e.g., target setting, communication, coaching). This implies that, since resilience is different from skills, sales manager training and development programs may need to be expanded or modified to cover topics beyond traditional selling and management skills in order to capture the benefit that enhancing manager resilience could bring. Secondly, while subjective ratings correlate with top line results in the same year, they do not correlate across years. Conversely, resilience and skills were measured in 2009 and correlated to top line results in both 2009 and 2010. The implication is that high resilience and skills in combination could have a longer term impact on, and possibly be more predictive of, top line performance, than traditional subjective ratings. Lastly, the research indicates that the effect of resilience on top line performance may be disrupted by major organizational change. This is not a huge revelation. Much of the resilience literature and research centers on resilience as a process of recovery from change, meaning change happens, people get knocked down, and their resilience eventually helps them to get back up and become once again productive. Thus, it should be expected that almost any major change is accompanied by a period of disruption. The implications for companies undergoing or contemplating major change are two-fold: they should explore ways to build the resilience of their managers and employees to expedite recovery and enhance adaptation; and they should consider ways to manage change that encourage a resilient response.

Future Research

This thesis is a small addition to a huge body of work that examines the impact of enhanced resilience on individuals, teams and organizations. The intent of this thesis was to answer a few very specific questions, and hopefully to raise several more questions and stimulate significantly more ideas for future research. Several possible areas for expanded research include change management approaches that shorten the organizational bounce back period, the relationship between resilience and commitment, the impact of sales rep resilience on sales productivity (or customer service), the role of Leader-Member Exchange in enhancing resilience, the efficacy of resilience training with sales people and resilience in multi-cultural sales forces.

Examine change management approaches that shorten the organizational bounce back period. This research showed that the positive effect on *Sales Performance (financial)* was significant in the last half of 2009, but was not significant in the first three quarters of 2010 immediately after a major organizational change. The effect reemerged in Q4 of 2010. Realignment, especially in pharmaceutical sales, which is fairly dynamic, is normal and a business necessity. This research implies that part of the cost of restructuring and sales force realignment might be temporary reductions in the effect DMs have on sales performance. Many other aspects of realignment, such as the number of changes in sales repï HCP relationships, changes to targets and objectives, changed reporting relationships, and product introductions and patent expirations possibly play an unexamined role in this interruption. In any case, it is possible that realignment, though necessary, may be accompanied by reduced productivity while the organization bounces back. This bounce back period refers to the time it takes after a large scale change for the organization to return to a state where positive actions and behaviors by a manager have statistically significant, positive impact on organizational performance. In short, it is the time it takes for the smoke to clear, the noise to settle and for DMs to have maximum impact. Future research could focus on change management techniques before, during and after a major change to shorten the bounce back period, with a particular focus on how higher or lower resilience impacts recovery. Of interest is the Wanberg and Banas (2000) research previously mentioned. They found that *Openness to change* (composed of two factors - *Willingness to accept or accommodate the change* and *Positive view of the change*.) was predictive of high *job satisfaction,* low *work irritation* and low *intention to leave*. Moreover, *Willingness to accept or accommodate the change* correlated significantly with *personal resilience*, *information* and *change related self-efficacy*, and *Positive view of the change* correlated significantly with *participation* (in the change effort). Future research could be extended to examine the effects of increasing the amount of relevant information provided to the targets of change, affording more participation, enhancing DM and sales rep resilience and change confidence has during organizational recovery from large scale change.

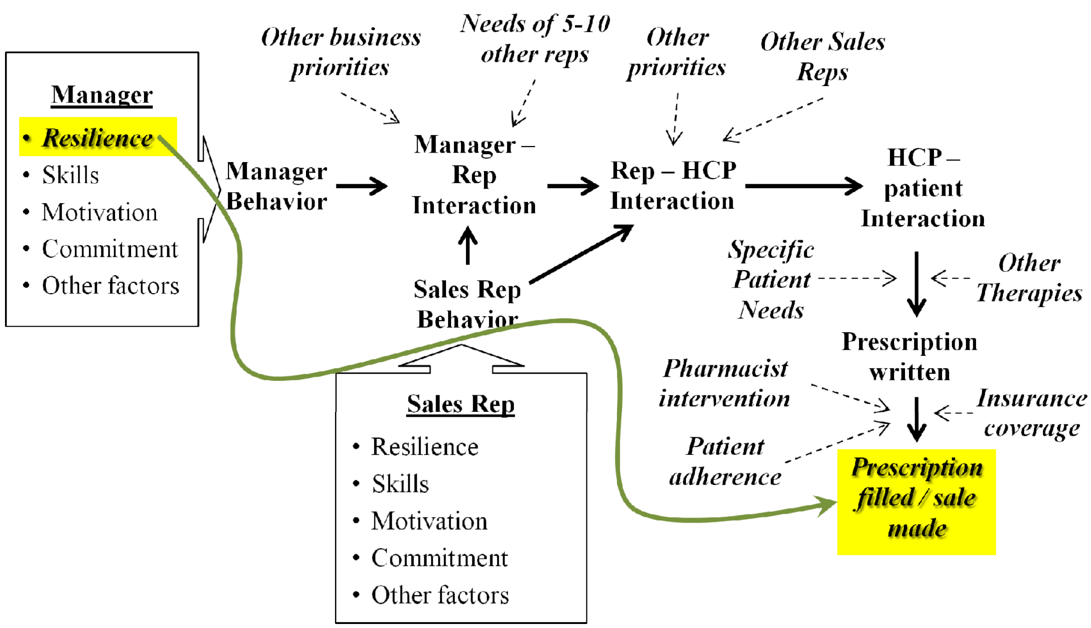

Figure 11. **Pathway from Manager Resilience to Prescription Filled (i.e., revenue generation).**

<u>Examine the relationship between sales rep resilience, experience, skills and sales performance.</u> Figure 11 highlights how a District Manager (DM) influences sales through a series of interactions, and how he or she is not a part of most of those interactions. Therefore their behaviors, attitudes, preferences and ideas likely suffer attenuation as the process proceeds through these several interactions. Figure 11 underscores the supposition that, while DM resilience may influence the overall achievement of sales targets, enhanced sales rep resilience will likely have an even greater impact, since higher or lower resilience will come directly into play during interactions with Healthcare Professionals, the most important decision-makers regarding whether or not a prescription for a specific drug is written. But this hypothesis, though logical, has not been supported in a pharmaceutical setting. If it were to be supported, the implications on sales rep development programs could be significant. In addition, it is possible , though not examined in this study, that if both the DM and sales rep have high personal resilience, the quality and content of their interactions could be enhanced, especially during times of disruptive change, and the óbounce backô period shortened. This hypothesis could be tested as well.

Examine the relationship between Leader-Member Exchange (LMX), resilience, motivation, commitment and sales performance. One source of variability in the model could be explained by what Castleberry and Tanner (1986) referred to as the vertical-dyad linkage (VDL) model, which attempted to explain the LMX between DMs and salespersons. They hypothesized that sales people gain in-group status with their managers by demonstrating competence, gaining trust and being motivated to take on more responsibility. This in-group status is rewarded with greater flexibility, more access to key information, more coaching, attention and training, and more responsibility, ultimately resulting in greater productivity than out-group salespersons. Castleberry and Tanner did not test these hypotheses in their 1986 article. In addition, significant research has been conducted to understand the impact that the LMX has on motivation and commitment. (Castleberry & Tanner Jr., 1986; Allen & Meyer, 1996; Iverson & Buttigieg, 1999; Finegan, 2000; Becker & Kernan, 2003; Meyer, Becker, & Vandenberghe, 2004; Eisenberger, et al., 2010) A comprehensive study that looks at the relationship between the quality of this vertical dyad linkage, manager / salesperson skills, experience, resilience, motivation, commitment and personality factors and the resultant impact on sales performance might provide richer insight into how DMs can influence sales. A draft conceptual model could be some variation of the one provided in Figure 12. This research could include examining the effects of mutually high resilience. Which characteristics create resonance in the LMX? Do any pairs of DM / sales rep resilience characteristics create conflict (e.g., a DM who has high *Focused* paired with a sales rep that has high *Flexible (thoughts))*? How does this play out during disruptive organizational change?

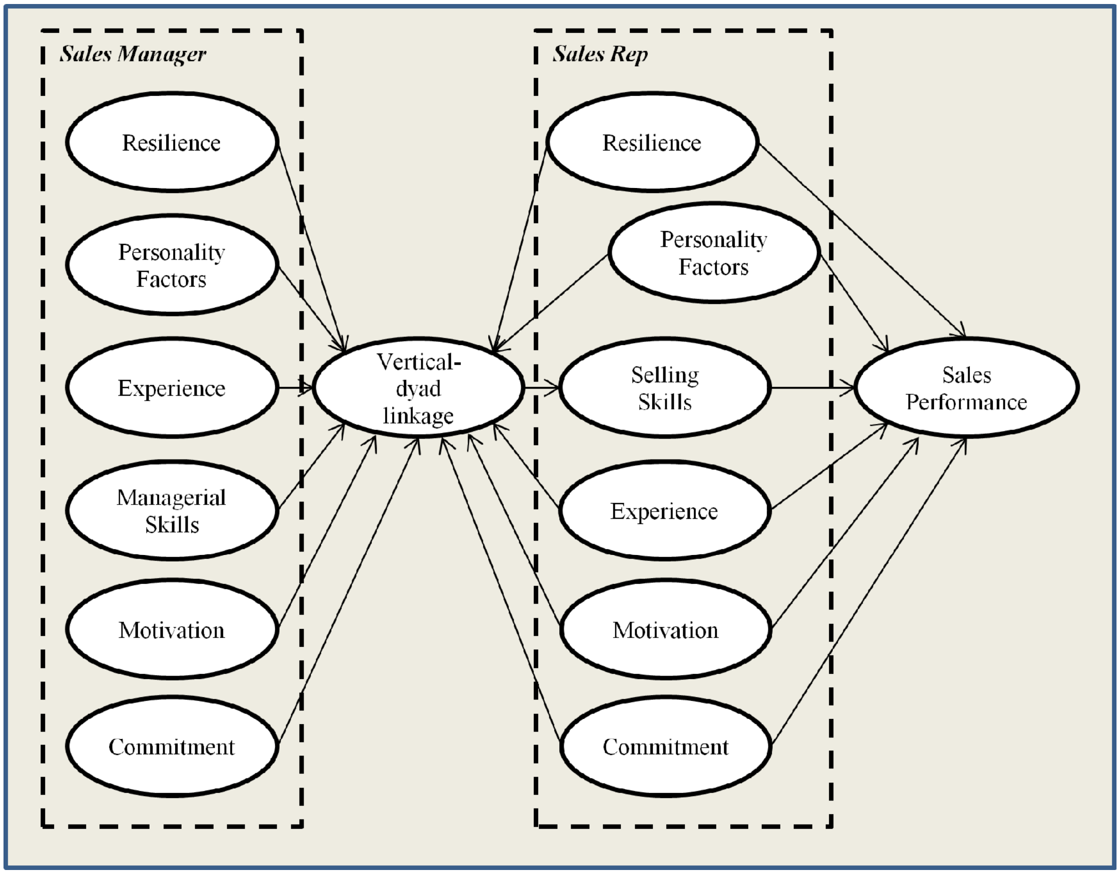

Figure 12. Possible conceptual model for testing the relationship between Leader-Member Exchange, resilience and sales performance.

Examine the relationship between resilience training and sales performance. A longitudinal study with DMs and sales reps similar to the Waite & Richardson (2004) study, which examines resilience levels and sales productivity before, upon completion of, and several periods after training, would validate the value and efficacy of training in a rigorous pharmaceutical sales environment. This research should include a control group, a ñtraining-plus-DM-follow-upò group and a ñtraining-onlyò group. In addition, obtaining the proper time commitment from the organization participating in the study will be crucial.

Examine the relationship between national culture, resilience and sales performance. The sales force studied in this thesis was a United States sales force only. The highest growth markets in the pharmaceutical industry are outside the United States, Canada and Western Europe. These emerging markets include Russia, China, India, Latin America and Eastern Europe, while most of the large research-based pharmaceutical companies, based in Western Europe and North America, have decidedly western organizational cultures. As the research-based pharmaceutical companies expand their sales efforts into these markets, will resilience mean the same thing? Will the measurement instruments for resilience literally and figuratively translate? In some languages, there is no direct translation of ñresilienceò that captures 100% of the English meaning. Will resilience translate to sales performance or other organizational outcomes in the same way? Could this knowledge from the emerging markets be leveraged to enhance sales performance in the multi-cultural markets within Western Europe and North America?

Concluding Comments

The pace and magnitude of changes in the Pharmaceutical industry is intense and that intensity will only increase. Nowhere is this pressure felt more than in the sales organizations of research-based pharmaceutical companies. The pressure to perform AND remain within strict ethical and regulatory guidelines is acute. During normal operations, District Managers provide a high degree of support, coaching and direction to sales reps in the field, and this support delivers results admired by many other industries. This thesis specifically examined how the District Manager's personal resilience, mediated by the District Manager's skills, was used to help sales representatives deliver superior sales performance. The research found that resilience, mediated by skills, makes a statistically significant difference to sales performance. While it was unclear how long it takes a resilient DM to bounce back from a disruptive change like a realignment, the research found that after large scale organizational change was added to the other ongoing pressures, this effect was interrupted and took several months for the system, including that part of the value chain that exists outside of the Company, to bounce back and reestablish the full effect of District Manager resilience and skills. Several leadership and change management disciplines seemed to logically converge. Leader-Member Exchange, organizational effectiveness, resilience, organizational commitment, motivation, business transformation and organizational development could all contribute to minimizing disruption and maximizing productivity during significant strategic organizational change.

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APPENDIX A
Synthesis of Resilience Constructs

Resilience Factors	Constructs, definitions and references
Internal Resilience Factors **General optimism and confidence**	• ***Positive (the World)*** (The tendency to see opportunities in a variety of situations, positive affectivity, optimistic attributional style) ***; Positive (Yourself)*** (self-efficacy, internal locus of control, self-esteem and self-efficacy) (Conner, 1992; Conner, 1998; Hoopes & Kelly, 2004; Conner Partners / Resilience Alliance, 2010) • ***Optimism*** (positive attitude, perspective, or thought process toward the world in the face of adversity, taking control of oneself, exerting willpower, and/or choosing a positive frame of reference); ***Identity*** (dealing with life based on oneӳ sense of identity); ***Self-efficacy*** (belief that one has the capabilities necessary to deal with life, obstacles, and/or crises) (Colgate, 1995) • ***Optimism*** (belief in a bright future); ***Self-efficacy*** (belief in your ability to handle situations that come your way (Jackson & Watkin, 2004; Reivich & Shatte, 2002) • ***Planned future*** (the ability to plan ahead, have a positive outlook, and be goal oriented); ***Perception of self*** (confidence in own abilities and judgments, self-efficacy and realistic expectations) (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005; Hjemdal, Friborg, Braun, Chantal, Linkowski, & Fossion, 2011) • ***Optimism; Openness to change*** (willingness to accept or accommodate the change and positive view of the change.); ***Self-esteem; Change related self-efficacy*** (i.e., skills and ability to handle change and function well); ***Personal impact*** (i.e., an individualӳ perceived impact on himself or herself) (Wanberg & Banas, 2000) • ***Factor 1*** (Personal competence, high standards & tenacity); ***Factor 2*** (Trust in oneӳ instincts, tolerance of negative affect and strengthening effects of stress); ***Factor 3*** (Positive acceptance of change and secure relationships) (Connor & Davidson, 2003) • ***Perceive experiences constructively; Develop tolerance for uncertainty***. (Mallak, 1998) • ***Future Orientation*** (optimism and confidence about the future, future goals) (Jew, 1999) • ***Self-esteem*** (belief in self, confidence and self-respect); ***Personal Competence*** (self-reliance, perseverance, reliability) (Windle, Markland, & Woods, Examination of a theoretical model of psychological resilience in older age, 2008) • ***Equanimity*** (sense of humor; taking life as it comes); ***Self-reliance*** (belief in self, capabilities and experiences); ***Existential Aloneness*** (sense of ӯniqueness and perhaps freedomӼ (Wagnild, 2009, p. 106)) • ***Confident Optimism*** (positive outlook, strong feelings of self-worth, action initiation and follow-through) (Klohnen, 1996)

Resilience Factors	Constructs, definitions and references
Control and clarity of purpose	• ***Focused*** (Clarity of purpose, sense of direction in life) (Conner, 1992; Conner, 1998; Hoopes & Kelly, 2004; Conner Partners / Resilience Alliance, 2010) • ***Identity; Self-efficacy*** (Colgate, 1995) • ***Emotion Regulation*** (keeping your emotions in check); ***Impulse Control*** (keeping your behavior in check) (Jackson & Watkin, 2004; Reivich & Shatte, 2002) • ***Planned future*** (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005; Hjemdal, Friborg, Braun, Chantal, Linkowski, & Fossion, 2011) • ***Information*** (about the change); ***Perceived control***; ***Participation*** (in the change effort) (Wanberg & Banas, 2000) • ***Factor 1; Factor 2; Factor 4*** (Clarity of purpose, sense of control) (Connor & Davidson, 2003) • ***Build virtual role systems*** (in which team members understand the role of the team and all its members). (Mallak, 1998) • ***Meaningfulness*** (clarity of purpose in life) (Wagnild, 2009) • ***Productive Activity*** (goal-setting, persistence, self-sufficiency, competence, resourcefulness) (Klohnen, 1996)
Open-mindedness and mental agility	• ***Flexible (Thoughts)*** (comfort with ambiguity, unfamiliar, contradictory or complex ideas, ambiguity tolerance, creativity, and cognitive complexity) (Conner, 1992; Conner, 1998; Hoopes & Kelly, 2004; Conner Partners / Resilience Alliance, 2010) • ***Cognitive Flexibility*** (the pursuit of novelty, challenge and/or new solutions, tolerance for ambiguity) (Colgate, 1995) • ***Expand decision-making boundaries*** (also to facilitate positive adaptive behaviors); ***Practice bricolage*** (i.e., create solutions in the moment out of what is available); ***Develop tolerance for uncertainty***. (Mallak, 1998) • ***Reaching Out*** (seeking out new opportunities and challenges) (Jackson & Watkin, 2004; Reivich & Shatte, 2002) • ***Interpersonal Warmth and Insight*** (close, supportive relationships, understand self and others, tolerance of ambiguity and open to new experiences) (Klohnen, 1996)

Resilience Factors	Constructs, definitions and references
External / Contextual Resilience Factors ***Quality of connections beyond self***	• ***Flexible (Social)*** (giving/receiving social support, interdependence, and extroversion) (Conner, 1992; Conner, 1998; Hoopes & Kelly, 2004; Conner Partners / Resilience Alliance, 2010) • ***Social Support*** (involved in relationships with others, reaches out to others and allows reciprocation); ***Social Comfort*** (comfort with people, social activities and social behaviors, social venturesomeness); ***Identity*** (Colgate, 1995) • ***Empathy*** (identifying what motivates others) (Jackson & Watkin, 2004; Reivich & Shatte, 2002) • ***Social competence*** (social warmth and flexibility, ability to establish friendships, and the positive use of humor); ***Social resources*** (availability of social support, has a confidante outside the family that appreciates encourages, and to whom one turns for help if needed); ***Family cohesion*** (family values are shared and family members enjoy spending time with each other, has an optimistic view of the future, has loyalty toward each other and has the feeling of mutual appreciation and support) (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005; Hjemdal, Friborg, Braun, Chantal, Linkowski, & Fossion, 2011) • ***Social support*** (Wanberg & Banas, 2000) • ***Factor 3; Factor 5*** (Spiritual influences) (Connor & Davidson, 2003) • ***Ensure adequate external resources*** (to facilitate positive adaptive behaviors); ***Expand decision-making boundaries***; ***Build virtual role systems***. (Mallak, 1998) • ***Active Skill Acquisition*** (learning orientation, other-person orientation) (Jew, 1999) • ***Interpersonal Control*** (create and maintain positive relationships) (Windle, Markland, & Woods, Examination of a theoretical model of psychological resilience in older age, 2008) • ***Interpersonal Warmth and Insight*** (Klohnen, 1996)

Resilience Factors	Constructs, definitions and references
Planning and organizing	• ***Organized*** (imposing structure on ambiguous situations and ability to systematize, sequence and plan) (Conner, 1992; Conner, 1998; Hoopes & Kelly, 2004; Conner Partners / Resilience Alliance, 2010) • ***Organization*** (A commitment to goals and the implementation of time management, planning, and scheduling so that goals can be attained) (Colgate, 1995) • ***Causal Analysis*** (diagnosing and solving problems effectively) (Jackson & Watkin, 2004; Reivich & Shatte, 2002) • ***Structured style*** (having and following routines, being organized, and the preference of clear goals and plans before undertaking activities) (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005; Hjemdal, Friborg, Braun, Chantal, Linkowski, & Fossion, 2011)
Action learning orientation	• ***Proactive*** (willing to act in the face of uncertainty or risk) (Conner, 1992; Conner, 1998; Hoopes & Kelly, 2004; Conner Partners / Resilience Alliance, 2010) • ***Social Comfort; Cognitive Flexibility; Self-efficacy*** (Colgate, 1995) • ***Reaching Out*** (Jackson & Watkin, 2004; Reivich & Shatte, 2002) • ***Factor 2*** (Connor & Davidson, 2003) • ***Perform positive adaptive behaviors***; ***Ensure adequate external resources***; ***Expand decision-making boundaries***; ***Practice bricolage***; ***Develop tolerance for uncertainty***. (Mallak, 1998) • ***Active Skill Acquisition*** (learning orientation, other-person orientation); ***Independence/Risk-taking*** (decision-making, decisiveness, risk-taking) (Jew, 1999) • ***Personal Competence*** (self-reliance, perseverance, reliability) (Windle, Markland, & Woods, Examination of a theoretical model of psychological resilience in older age, 2008) • ***Perseverance*** (continuing in the face of adversity) (Wagnild, 2009) • ***Confident Optimism; Productive Activity; Skilled Expressiveness*** (assertive, self-assured, spontaneous) (Klohnen, 1996)

APPENDIX B

Research Risks and Mitigation Strategies

Source of Risk, Bias or Conflict of Interest	Mitigation Strategy
Company or public gain access to PRQ data for individuals	• Resilience Alliance sent PRQ data to the researcherǿs personal email account and this data were held on researcherǿs external hard drive only. Researcher used his personal computer only for consolidation, de-identification and analysis. At no time did the Company have access to electronic or hard copies of PRQ data prior to de-identification. • Once the consolidated dataset was aligned by name, scenarios developed and demographics characterized: • Names were replaced with random numbers • All other identifying data were deleted • Upon completion of research, all versions (i.e., the saved backup) of individual or consolidated datasets were deleted and file deletion secured (including hard drive free space) to NSA standard using CCleaner software • No identification key was developed or retained • After de-identification, neither the Company, nor Resilience Alliance, nor the researcher knows which resilience data or which Company data are associated with any person.

Company or public gain access to the consolidated dataset prior to de-identification	• Consolidated dataset was held on Researcherôs external hard drive only and de-identified on Researcherôs personal computer. • Once the consolidated dataset has been created and characterized, names were replaced with random alphanumeric codes and all identifying information, including, but not limited to, name, sales district/region location, sales district/region name, hire date, termination date, date transferred into or out of position, gender, ethnicity, and age were deleted from the dataset. • All copies of all datasets (prior to de-identification) were deleted and file deletion secured (including hard drive free space) to NSA standard using CCleaner software.
Data could be lost, corrupted or stolen	• Researcher password protected folders and files containing research data. Only researcher, Thesis Advisor and 1st Reader know the passwords. • Datasets were backed up to a second external hard drive (owned by the researcher) weekly. Backup hard drive was secured in the same fashion as the primary external hard drive.
Company or public draws inferences and takes undue action based on knowledge of individual PRQ results or Company information	• Risk was eliminated by the above precautions. • In addition, company has very robust policies, programs and safeguards in place to prevent improper or illegal use of employee data in employment practices.

Researcher has professional relationships with both the Company providing the data and with Resilience Alliance.	• Thesis Advisor & 1st Reader are aware of Researcherôs relationship with the Company. • Thesis Advisor & 1st Reader have no direct commercial relationship with the Company. • Thesis Advisor, 1st Reader, the researcher and the Company have negotiated a confidentiality Agreement prior to research. • Thesis Advisor, 1st Reader, and the researcher at no time probed or received the Companyôs ñdesired outcomesò or research hypotheses - these originated from the researcher, Thesis Advisor, and 1st Reader only. • Per discussion with the Company, thesis will not influence the relationship with the Company positively or negatively. • Any potential for Conflict of Interest & mitigation strategies were explicitly stated in the thesis.
The Company participating in this research could theoretically attempt to influence the conduct or outcomes of the research. Company has the right to prohibit publication, presenting a potential Conflict of Interest for the PI, Thesis Advisor and/or 1st Reader (who desire publication)	• Company reserved the right to review the thesis prior to submission to ensure no demographic analysis (other than previously outlined) was conducted and that no competitive information was being released. • Other than the collection of Companyôs data, no collaboration occurred with the Company until the findings were written and reviewed by Thesis Advisor and 1st Reader. • Researcher, Thesis Advisor, and 1st Reader recognized and accepted the possibility that Company theoretically could have attempted to influence findings and/or prohibit publication, and therefore they provided for the enlistment of a disinterested second reader to provide objective review of any input provided by Company. (The Company made no attempt to influence findings or prohibit publication.)

Company (or anyone reading the thesis or subsequent published article) may improperly use the study results as de facto criteria for employment actions (e.g., recruitment, selection, hiring, promotion, or termination)	• Any study which correlates individual attributes (personality, preference, etc.) could be used improperly by anyone without sufficient validity testing and without the knowledge or approval of the researchers. **Mitigation strategy:** • Included in thesis is a disclaimer that this research does not constitute a psychometric validity study under EEOC guidelines, and should not be used in any employment action, (e.g., recruitment, selection, hiring, promotion, or termination) without further validity and disparate impact testing per EEOC best practice. • Researcher included a link to the EEOC best practice guidelines in thesis. • Researcher delineated the limitations of this study. That is, that other factors, unrelated to resilience, likely contribute significantly to sales performance.

APPENDIX C
Confidentiality and Non-disclosure Agreement with Resilience Alliance

CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT: RESEARCH

This Confidentiality and Non-Disclosure Agreement (the "***Agreement***") is made this 23rd day of June, 2011 (the "***Effective Date***") by and between LLH Ventures, LLC, a Georgia limited liability company d/b/a "Resilience Alliance" ("***Discloser***"), having an address of 315 W. Ponce de Leon Ave., Suite 433, Decatur Georgia 30030, and Joseph A. Fletcher, a University of Delaware Master's candidate ("***Recipient***"), having an address of 2418 Grubb Road, Wilmington, Delaware 19810.

WHEREAS, Discloser has certain information that Discloser seeks to share and exchange with Recipient for the purpose of pursuing certain mutually beneficial research opportunities and ventures;

WHEREAS, said information to be shared by Discloser is valuable and vital to Discloser's business; and

WHEREAS, Recipient is willing to keep all such information confidential and secret and agree not to disclose same pursuant to the terms of this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged by the parties, Recipient and Discloser hereby agree as follows:

1. Confidential Information. The confidential information to be disclosed by Discloser under this Agreement (collectively, the "***Confidential Information***") shall include that information identified on Exhibit A attached hereto and incorporated herein by reference, and related and supplemental information, which may include, but is not limited to:

> (i) All cognizable or potential intellectual property, including, without limitation, technical or business information relating to Discloser's proprietary ideas, patentable ideas, potential or existing trademarks and service marks, potential or existing copyrights, and trade secrets; (ii) existing or contemplated products and services, including, without limitation, consulting processes and methods, software, schematics, research and development, training manuals, operating manuals and techniques, and production; and (iii) and all other information or material that has or could have commercial value or utility in the business in which Discloser is engaged.

Such information shall be held confidential notwithstanding whether such information is specifically designated as "Confidential Information" or "Secret" at the time of its disclosure.

Confidential Information shall not include information that (a) was discovered or created or was in Recipient's possession before receipt from Discloser; (b) is or becomes a matter of public knowledge through no fault of and independent of any act or omission of Recipient; (c) is rightfully and legitimately received by Recipient from a third party not owing a duty of confidentiality to the Discloser and who was not directly solicited for same by Recipient; or (d)

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is disclosed to a third party by, or with the written authorization of, Discloser, within the scope of such written authorization.

Recipient shall use the Confidential Information only for the express purpose of planning and executing research investigations and for no other purpose whatsoever.

2. Non-disclosure of Confidential Information. Recipient shall not disclose and shall hold and maintain in strictest confidence all Confidential Information disclosed by Discloser to Recipient. Without the written permission of Discloser, Recipient shall not use for its own benefit, publish, copy, or otherwise disclose to others, or permit or tolerate the use by others for their benefit or to the detriment of the Discloser any Confidential Information. Further, Recipient shall limit disclosure of Confidential Information within its own organization to its directors, officers, partners, members and/or employees having a need to know for the purpose expressed in Section 1 of this Agreement. Recipient shall immediately return to Discloser any and all records, notes, and other written, printed, and any and all other tangible materials (including in electronic format) in its possession relating to the Confidential Information upon request of Discloser and shall destroy any and all duplicate copies of same. Specific requirements and exceptions to this Section 2 of this Agreement are detailed in Sections 2(a) and 2(b) below.

a. Recipient agrees to replace each respondent's name with a randomly-generated numeric code and to delete age and gender data upon incorporation into the Recipient's dataset and to delete all other copies (paper or electronic) of PRQ data. Recipient agrees to provide positive confirmation via email back to Resilience Alliance once these steps are complete. Under no circumstance may Recipient disclose the PRQ results for identified individuals to anyone not bound by a Confidentiality and Non-Disclosure Agreement with Resilience Alliance, and Recipient shall take reasonable safeguards to prevent such disclosure.

b. Recipient may conduct research investigations of the de-identified PRQ dataset and other company-owned datasets for DSMs/RSDs, and may publish the results of this analysis as a thesis or other professional journal article. Recipient may conduct further analysis of the de-identified PRQ dataset beyond the proposed DSM/RSD analysis **provided** Resilience Alliance receives prior notification via email and is provided all research results at no charge.

3. Warranties/Indemnification. Discloser warrants that Discloser has the right to make the disclosures of Confidential Information under this Agreement. Recipient warrants that Recipient may make the agreements and covenants regarding maintaining the secrecy of the Confidential Information as set forth in this Agreement. Discloser agrees to indemnify Recipient and its directors, officers, partners, members and employees in the event of the violation of the warranty set forth herein, and Recipient agrees to indemnify Discloser and its directors, officers, partners, members and employees in the event of the violation of the warranty set forth herein.

4. Time Period. This Agreement shall run from the Effective Date and continue in perpetuity until such time as Discloser notifies Recipient in writing that Recipient is released from its duties respecting the Confidential Information in whole or in part (and with respect to a partial release, this Agreement shall continue in full force and effect with respect to that Confidential Information that Discloser does not release in writing). Notwithstanding the foregoing, should certain Confidential Information no longer qualify under the definition of

Confidential Information as set forth in Section 1 of this Agreement, then the obligations set forth in this Agreement shall terminate with respect to such no longer qualifying information only.

5. No Transfer of Property Rights. This Agreement shall not be construed as creating, conveying, transferring, granting or conferring upon the Recipient any property rights, license or authority in or to the information exchanged, except for the limited right to use Confidential Information for the purpose specified in Section 1 hereof. Furthermore, and specifically, no license or conveyance of any intellectual property rights is granted under this Agreement or shall arise by implication.

6. Preliminary Nature of Agreement. Neither party has any obligation under this Agreement to purchase any service, goods, or intangibles from the other party. Discloser may, at its sole discretion, using its own information, offer such products and/or services related to the Confidential Information for sale and modify them or discontinue sale at any time. Furthermore, both parties acknowledge and agree that the exchange of information under this Agreement shall not commit or bind either party to any present or future contractual relationship (except as specifically stated and declared in this Agreement), nor shall the exchange of information be construed as an inducement to act or not to act in any given manner.

7. Limitation on Consequential Damages. Subject to Section 8 of this Agreement, neither party shall be liable to the other in any manner whatsoever for any decisions, obligations, costs or expenses incurred, changes in business practices, plans, organization, products, services, or otherwise, based on either party's decision to use or rely on any information exchanged under this Agreement.

8. Remedies. If there is a breach or threatened breach of any provision of this Agreement, it is agreed and understood that Discloser shall have no adequate remedy in money or other damages and accordingly shall be entitled to injunctive relief without the necessity of posting any bond; provided however, no specification in this Agreement of any particular remedy shall be construed as a waiver or prohibition of any other remedies in the event of a breach or threatened breach of this Agreement by Recipient. In any conflict or dispute hereunder, the prevailing party shall be entitled to the collection of all of its attorney's fees and expenses.

9. General. This Agreement constitutes the entire understanding of and agreement between the parties relating to the subject matter hereof, and supersedes all prior representations, agreements and understandings. This Agreement may not be modified except by a written document signed by duly authorized representative of the parties. This Agreement shall be construed and enforced according to the laws of the State of Georgia and the federal law of the United States, excluding the laws of those jurisdictions pertaining to the resolution of conflicts of laws with other jurisdictions. A waiver of any right under this Agreement shall be valid and effective only if in writing and executed by the parties hereto. A written waiver of a right, remedy or obligation under a provision of this Agreement will not constitute a waiver of the provision itself, a waiver of any succeeding right, remedy or obligation under the provision or a waiver of any other right, remedy or obligation under this Agreement. If any provision of this

Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable in any respect, such provision in all other respects shall nevertheless continue in full force and effect without being impaired or invalidated and shall be enforced to the full extent permitted by law. Headings included herein are for convenience only, do not form a part of the Agreement, and shall not be used in any way to construe or interpret this Agreement. In the event of any dispute arising out of this Agreement, the parties hereto select the jurisdiction and venue of the state and federal courts located in the State of Georgia, United States of America, irrespective of choice-of-law provisions of any particular state, territory, or country (including the State of Georgia). This Agreement is binding upon the parties hereto and their assigns, successors-in-interest, heirs, or other transferees. This Agreement may be signed in multiple counterparts, including facsimile or electronic signatures (e.g., transmitted and exchanged via electronic mail), and each counterpart when taken with all of the other executed counterparts, shall constitute a binding agreement among the parties executed as of the Effective Date.

IN WITNESS WHEREOF, the parties under seal hereunto affix their signatures by their duly authorized officers (as applicable) as of the day and year indicated above.

DISCLOSER:
LLH Ventures, LLC,
a Georgia limited liability company

By:______________________
Linda L. Hoopes, Manager

[COMPANY SEAL]

RECIPIENT:

By:______________________
Name: Joseph A. Fletcher
Title: Master's candidate
Organization: University of Delaware

APPENDIX D
IRB Approval Letter

UNIVERSITY OF DELAWARE   RESEARCH OFFICE

210 Hullihen Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE:	June 2, 2011
TO:	Joseph Fletcher, MS-OEDC
FROM:	University of Delaware IRB
STUDY TITLE:	[247256-1] Testing the relationship between Personal Resilience Questionnaire (PRQ) results of Pharmaceutical Sales Leaders and sales team performance
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	June 2, 2011
REVIEW CATEGORY:	Exemption category # 4

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will put a copy of this correspondence on file in our office. Please remember to notify us if you make any substantial changes to the project.

If you have any questions, please contact Jody-Lynn Berg at (302) 831-1119 or jlberg@udel.edu. Please include your study title and reference number in all correspondence with this office.

APPENDIX E

Demographic Data

Table E-1. Demographics of all DMs in 2009 sample versus total sample

	All DMs 2009 / 2010 (n=590)				DMs meeting inclusion criteria for 2nd sample (n=408)			
	N	% of total	Mean	SD	N	% of total	Mean	SD
Age			42.27	7.08			42.61	7.03
<25	0	0.00%			0	0.00%		
26-30	10	1.69%			7	1.72%		
31-35	93	15.76%			61	14.95%		
36-40	145	24.58%			96	23.53%		
41-45	151	25.59%			111	27.21%		
46-50	97	16.44%			73	17.89%		
51-55	49	8.31%			33	8.09%		
56-60	18	3.05%			15	3.68%		
61+	8	1.36%			6	1.47%		
Unknown / not declared	19	3.22%			6	1.47%		
Years of Service			10.79	5.96			10.84	5.72
Gender								
Male	399	67.63%			272	66.67%		
Female	191	32.37%			136	33.33%		
Race								
AmInd/AlskNatv not Hisp/Latn	5	0.85%			5	1.23%		
Asian/Pacific Islander	15	2.54%			8	1.96%		
Black/Africn Am not Hisp/Latn	49	8.31%			29	7.11%		
Hispanic or Latino	27	4.58%			21	5.15%		
Unknown / not declared	3	0.51%			3	0.74%		
White not Hispanic/Latino	491	83.22%			342	83.82%		

Table E-2. Demographics of all DMs in 2010 sample versus total sample

	All DMs 2009 / 2010 (n=590)				DMs meeting inclusion criteria (n=318)			
	N	% of total	Mean	SD	N	% of total	Mean	SD
Age			42.27	7.08			42.28	6.71
<25	0	0.00%			0	0.00%		
26-30	10	1.69%			6	1.89%		
31-35	93	15.76%			47	14.78%		
36-40	145	24.58%			81	25.47%		
41-45	151	25.59%			86	27.04%		
46-50	97	16.44%			62	19.50%		
51-55	49	8.31%			24	7.55%		
56-60	18	3.05%			6	1.89%		
61+	8	1.36%			5	1.57%		
Unknown / not declared	19	3.22%			1	0.31%		
Years of Service			10.79	5.96			10.78	5.16
Gender								
Male	399	67.63%			217	68.24%		
Female	191	32.37%			101	31.76%		
Race								
AmInd/AlskNatv not Hisp/Latn	5	0.85%			4	1.26%		
Asian/Pacific Islander	15	2.54%			9	2.83%		
Black/Africn Am not Hisp/Latn	49	8.31%			18	5.66%		
Hispanic or Latino	27	4.58%			15	4.72%		
Unknown / not declared	3	0.51%			3	0.94%		
White not Hispanic/Latino	491	83.22%			269	84.59%		

APPENDIX F

LISREL Syntax for Structural Equation Modeling (Jöreskog & Sörbom, 2006)

2009 (Q3/Q4) Sales Performance (financial) – Fully Mediated Model

```
TI FLETCH MODEL TAKE 09full
DA NI=9 NO=408
LA
'PERF' 'SKILL1' 'SKILL2' 'SKILL3' 'RES1A' 'RES1B' 'RES1C' 'RES2A' 'RES2B'
CM
187.93
.94 .56
1.27 .38 .54
1.06 .38 .39 .87
5.62 1.37 .94 1.71 376.44
1.04 1.15 .51 .32 303.01 476.87
12.73 .95 .60 1.44 228.82 226.84 262.34
-.57 2.31 2.63 1.32 176.38 161.37 142.72 644.60
19.21 1.85 2.72 2.93 247.12 242.89 178.05 346.14 688.54
MO NX=5 NY=4 NK=2 NE=2 LX=FU,FI LY=FU,FI TE=SY,FI TD=SY,FI
BE=FU,FI GA=FU,FI PS=SY,FI PH=SY,FR
LE
PERF SKILLS
LK
RESI RES2
VA 1. LY 1 1 LY 2 2
FR LY 3 2 LY 4 2
VA 1. LX 1 1 LX 4 2
FR LX 2 1 LX 3 1 LX 5 2
FR TE 2 2 TE 3 3 TE 4 4
FR TD 1 1 TD 2 2 TD 3 3 TD 4 4 TD 5 5
FR BE 1 2
FR GA 2 1 GA 2 2
FR PS 1 1 PS 2 2
FR PH 1 1 PH 2 1 PH 2 2
PD
OU TO MI RS TV SE SS AD=OFF IT=1000
```

2009 (Q3/Q4) Sales Performance (financial) – Partially Mediated Model

```
TI FLETCH MODEL PARTIALLY MEDIATE I
DA NI=9 NO=408
LA
'PERF' 'SKILL1' 'SKILL2' 'SKILL3' 'RES1A' 'RES1B' 'RES1C' 'RES2A' 'RES2B'
CM
187.93
.94 .56
1.27 .38 .54
1.06 .38 .39 .87
5.62 1.37 .94 1.71 376.44
1.04 1.15 .51 .32 303.01 476.87
12.73 .95 .60 1.44 228.82 226.84 262.34
-.57 2.31 2.63 1.32 176.38 161.37 142.72 644.60
19.21 1.85 2.72 2.93 247.12 242.89 178.05 346.14 688.54
MO NX=5 NY=4 NK=2 NE=2 LX=FU,FI LY=FU,FI TE=SY,FI TD=SY,FI
BE=FU,FI GA=FU,FI PS=SY,FI PH=SY,FR
LE
PERF SKILLS
LK
RESI RES2
VA 1. LY 1 1 LY 2 2
FR LY 3 2 LY 4 2
VA 1. LX 1 1 LX 4 2
FR LX 2 1 LX 3 1 LX 5 2
FR TE 2 2 TE 3 3 TE 4 4
FR TD 1 1 TD 2 2 TD 3 3 TD 4 4 TD 5 5
FR BE 1 2
FR GA 2 1 GA 2 2 GA 1 1
FR PS 1 1 PS 2 2
FR PH 1 1 PH 2 1 PH 2 2
PD
OU TO MI RS TV SE SS AD=OFF IT=1000
```

2010 (Q1) Sales Performance (financial) – Fully Mediated Model	**2010 (Q2) Sales Performance (financial) – Fully Mediated Model**
TI FLETCH MODEL TAKE Q12010full DA NI=9 NO=318 LA 'PERF' 'SKILL1' 'SKILL2' 'SKILL3' 'RES1A' 'RES1B' 'RES1C' 'RES2A' 'RES2B' CM 184.98 .09 .40 -.12 .26 .45 .28 .23 .26 .71 -14.41 1.70 1.32 1.76 368.87 -32.17 1.96 1.34 .18 314.13 495.59 -5.44 .90 .78 1.00 230.04 239.58 267.85 15.91 2.84 2.52 .52 168.26 149.90 132.43 630.42 -4.66 2.66 3.29 1.65 241.16 246.10 172.54 363.23 717.09 MO NX=5 NY=4 NK=2 NE=2 LX=FU,FI LY=FU,FI TE=SY,FI TD=SY,FI BE=FU,FI GA=FU,FI PS=SY,FI PH=SY,FR LE PERF SKILLS LK RESI RES2 VA 1. LY 1 1 LY 2 2 FR LY 3 2 LY 4 2 VA 1. LX 1 1 LX 4 2 FR LX 2 1 LX 3 1 LX 5 2 FR TE 2 2 TE 3 3 TE 4 4 FR TD 1 1 TD 2 2 TD 3 3 TD 4 4 TD 5 5 FR BE 1 2 FR GA 2 1 GA 2 2 FR PS 1 1 PS 2 2 FR PH 1 1 PH 2 1 PH 2 2 PD OU TO MI RS TV SE SS AD=OFF IT=1000	TI FLETCH MODEL TAKE Q22010full DA NI=9 NO=318 LA 'PERF' 'SKILL1' 'SKILL2' 'SKILL3' 'RES1A' 'RES1B' 'RES1C' 'RES2A' 'RES2B' CM 122.81 .23 .40 .35 .26 .45 -.06 .23 .26 .71 10.72 1.70 1.32 1.76 368.87 11.63 1.96 1.34 .18 314.13 495.59 8.39 .90 .78 1.00 230.04 239.58 267.85 8.81 2.84 2.52 .52 168.26 149.90 132.43 630.42 7.27 2.66 3.29 1.65 241.16 246.10 172.54 363.23 717.09 MO NX=5 NY=4 NK=2 NE=2 LX=FU,FI LY=FU,FI TE=SY,FI TD=SY,FI BE=FU,FI GA=FU,FI PS=SY,FI PH=SY,FR LE PERF SKILLS LK RESI RES2 VA 1. LY 1 1 LY 2 2 FR LY 3 2 LY 4 2 VA 1. LX 1 1 LX 4 2 FR LX 2 1 LX 3 1 LX 5 2 FR TE 2 2 TE 3 3 TE 4 4 FR TD 1 1 TD 2 2 TD 3 3 TD 4 4 TD 5 5 FR BE 1 2 FR GA 2 1 GA 2 2 FR PS 1 1 PS 2 2 FR PH 1 1 PH 2 1 PH 2 2 PD OU TO MI RS TV SE SS AD=OFF IT=1000

2010 (Q3) Sales Performance (financial) – Fully Mediated Model

```
TI FLETCH MODEL TAKE Q32010full
DA NI=9 NO=318
LA
'PERF' 'SKILL1' 'SKILL2' 'SKILL3' 'RES1A' 'RES1B' 'RES1C' 'RES2A' 'RES2B'
CM
89.32
-.10 .40
.05 .26 .45
-.05 .23 .26 .71
-12.32 1.70 1.32 1.76 368.87
-7.40 1.96 1.34 .18 314.13 495.59
-9.99 .90 .78 1.00 230.04 239.58 267.85
-7.87 2.84 2.52 .52 168.26 149.90 132.43 630.42
-21.68 2.66 3.29 1.65 241.16 246.10 172.54 363.23 717.09
MO NX=5 NY=4 NK=2 NE=2 LX=FU,FI LY=FU,FI TE=SY,FI TD=SY,FI
BE=FU,FI GA=FU,FI PS=SY,FI PH=SY,FR
LE
PERF SKILLS
LK
RESI RES2
VA 1. LY 1 1 LY 2 2
FR LY 3 2 LY 4 2
VA 1. LX 1 1 LX 4 2
FR LX 2 1 LX 3 1 LX 5 2
FR TE 2 2 TE 3 3 TE 4 4
FR TD 1 1 TD 2 2 TD 3 3 TD 4 4 TD 5 5
FR BE 1 2
FR GA 2 1 GA 2 2
FR PS 1 1 PS 2 2
FR PH 1 1 PH 2 1 PH 2 2
PD
OU TO MI RS TV SE SS AD=OFF IT=1000
```

2010 (Q4) Sales Performance (financial) – Fully Mediated Model

```
TI FLETCH MODEL TAKE Q42010full
DA NI=9 NO=318
LA
'PERF' 'SKILL1' 'SKILL2' 'SKILL3' 'RES1A' 'RES1B' 'RES1C' 'RES2A' 'RES2B'
CM
80.27
.37 .40
.84 .26 .45
.47 .23 .26 .71
14.36 1.70 1.32 1.76 368.87
15.62 1.96 1.34 .18 314.13 495.59
14.93 .90 .78 1.00 230.04 239.58 267.85
25.26 2.84 2.52 .52 168.26 149.90 132.43 630.42
18.99 2.66 3.29 1.65 241.16 246.10 172.54 363.23 717.09
MO NX=5 NY=4 NK=2 NE=2 LX=FU,FI LY=FU,FI TE=SY,FI TD=SY,FI
BE=FU,FI GA=FU,FI PS=SY,FI PH=SY,FR
LE
PERF SKILLS
LK
RESI RES2
VA 1. LY 1 1 LY 2 2
FR LY 3 2 LY 4 2
VA 1. LX 1 1 LX 4 2
FR LX 2 1 LX 3 1 LX 5 2
FR TE 2 2 TE 3 3 TE 4 4
FR TD 1 1 TD 2 2 TD 3 3 TD 4 4 TD 5 5
FR BE 1 2
FR GA 2 1 GA 2 2
FR PS 1 1 PS 2 2
FR PH 1 1 PH 2 1 PH 2 2
PD
OU TO MI RS TV SE SS AD=OFF IT=1000
```