

**WHY SOME CHANGE AND OTHERS DO NOT: UNDERSTANDING THE EFFECTS  
OF COMPETITION IN OVERLAPPING PROFESSIONAL JURISDICTIONS ON  
STATES, HEALTHCARE MARKETS AND TRAINING PROGRAMS.**

**By**

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## CHAPTER ONE: INTRODUCTION

The establishment of jurisdictional claims over unique sets of professional knowledge and activities is created over time, and is solidified in three different arenas: the workplace, public, and legal arenas (Abbott, 1988). Although some professions have achieved relatively stable control over their jurisdictions, others are often in flux (i.e. Halpern, 1992). Pressures emanating from various environmental conditions unsettle markets for professional services, resulting in changing jurisdictional boundaries (Marier et al., 2014). This is especially true for those professions sharing overlapping jurisdictions with others (Reay et al., 2006). Understanding the conditions under which these overlapping jurisdictions change, and the effects of such changes, is central to the research presented here.

Cost pressures in the markets for healthcare services have led law-making bodies to reconsider institutional arrangements that have favored particular groups of professionals (Hartley, 2002). For example, consider the field of anesthesiology, which is the setting for this dissertation. Medical Doctors of Anesthesiology (MDAs) have long enjoyed a superior status in the delivery of anesthetics, despite the presence of another set of anesthesia providers capable of providing the same service. This alternate provider group is called Nurse Anesthetists (CRNAs). CRNAs have long delivered safe anesthesia in relative obscurity, and for considerably less money than MDAs (Hogan et al., 2010). As those in power face increasing pressures to find ways to provide coverage to greater numbers of constituents at lower costs, professions such as anesthesia providers are seeing changes in their fields (Manchikanti et al., 2012).

Incumbent professionals resist many healthcare changes cast as innovations due to concerns about losing prestige and power over challenger professions who previously were prevented from practicing on their own (Abbott, 1988; Manchikanti et al., 2012). How these

issues are worked out is of central concern to organizational theorists who are interested in understanding innovation and change in highly institutionalized fields (i.e Negro et al., 2013). Previous research in healthcare contexts has focused on competing logics (Dunn & Jones, 2010), direct actions by professions (Starr, 1982), or characteristics of medical facilities (Burns & Wholey, 1993; Goodrick & Salancik, 1996) to explain change in how healthcare is delivered. In Chapter Two, I focus on an important understudied factor - the role of the state in facilitating innovation in healthcare.

Focusing on the state in relation to the field of health care is important for two reasons. First, healthcare is a highly regulated field. Professions and organizations, though highly influential actors, cannot in many situations enact or prevent change in healthcare delivery without the regulative authority of the state. States approve the licensing of professionals for the delivery of healthcare and thus are important gatekeepers in the innovation process. Second, in the United States, regulations governing healthcare are often created and enforced by individual state governments. This creates circumstances under which healthcare practices can vary by state. Understanding the causes of this variance in such a highly institutionalized field is an important avenue for organizational theorists.

As the professional contestation in the field of anesthesiology has evolved, there have been other organizational actors affected. In particular, the actions of CRNA schools provide a window into the effects of the power struggle that has gone on in anesthesia. Due to the power MDAs have accrued over the last century, they have been able to influence the composition of CRNA schools. By exerting pressure on nursing schools, MDAs were able to push CRNA training programs into peripheral institutions such as hospitals and military settings (Bankert,

1982). This created difficulty for CRNA schools when trying to adjust to changing environments.

Chapter Three examines this phenomenon by looking at which factors explain the strategic choices and survival of CRNA schools. Increasing pressure on CRNAs to increase their levels of academic preparation led schools to take various actions in response to this pressure. Using multinomial regression, I am able to understand more about why some CRNA schools were able to meet the demand for higher-level degrees and survive while others simply closed.

An additional overflow stemming from this professional battle was a tendency for schools to form strategic alliances. For some schools, depending on their stock of resources and where those resources were located within the organization, the best way to utilize their resources was to pool them with others. Using a resource based perspective, I examine antecedents to strategic alliance formation in Chapter Four.

### **Summary and Significance of This Study**

Taken together, these studies aim to help explain some of the drivers of, and effects on inter-professional competition in a professional field. The questions presented here open the door to understanding more about the antecedents and effects of professional power; in particular that of physician power. Although some have presented work on the overall system and background of how physician power became institutionalized (i.e. Starr, 1982; Abbott, 1988; Halpern, 1992; Reay et al., 2006), few if any have quantitatively and systematically examined an overlapping challenger profession at multiple levels (see Marier et al., 2014 for a recent qualitative example). I contribute such work here. I will examine professional power and regulatory policy within and across states, as well as across a population of training

organizations. By doing so, it enables further understanding as to the effects of regulatory policy, and additionally the movement and behavior of professionals in response to such events.

## **CHAPTER TWO**

### **WHOSE SIDE ARE YOU ON, ANYWAY?**

#### **STATES' ROLES IN ENABLING AND CONSTRAINING INNOVATIONS IN HEALTHCARE MARKETS**

##### **Abstract**

Institutional theory is utilized to understand the role of the state in determining who among overlapping professions are allowed to compete in healthcare markets. Hypotheses are tested using a professional licensing policy innovation that influences the evolution of markets for healthcare services. This paper demonstrates how the power of incumbent and challenging professional associations, the characteristics of a state's labor market, and previous adoptions by neighboring states affect a state's propensity to embrace or resist state legislation of professionally-contested healthcare licensing legislation over a 10-year observation period. The results of this research have implications for understanding state healthcare market innovations, the power of professional associations, and institutional theory.

*“At VHA, Doctors, Nurses Clash on Oversight; Anesthesiologists balk at proposal easing rules on physician supervision” (Wall Street Journal, 1/26/14)*

Healthcare in the United States is a highly institutionalized field, one that is not easily changed (Scott et al., 2000). In spite of the overall trend toward stability in healthcare delivery, there is a long history of organizational research that has identified the conditions under which healthcare markets change over time (i.e. Dunn & Jones, 2010). Researchers have observed that changes in the field of healthcare can be due to socio-cultural, organizational, and profession-based factors.

For instance, Starr (1982) identified how industrialization and migration to large cities precipitated the rise of physician power, resulting in the prominence of physician-led healthcare based in hospitals. Some researchers have focused on field-level phenomena, observing how changes in the relative concentration of institutional logics affect how physicians are trained to approach the delivery of patient care (Dunn & Jones, 2010). Other researchers have pointed to the rise of new forms of healthcare organizations, such as HMO's, as an important factor in limiting the options of patients and directing the attention of physicians toward containing the cost of healthcare services (Burns & Wholey, 1993; Scott et al., 2000). And, at the organization level, variation in healthcare practices across hospitals has been attributed to differences in hospital values and ownership structures (Goodrick & Salancik, 1996).

Overlooked in explanations of change in healthcare delivery is the role of the state as an important actor. The state refers to governmental regulation at the national or state level. The state makes, defines, and enforces rules that determine which producers can participate in markets and how competition occurs. Producers, consumers and institutional actors, in turn, support, resist, and shape the rules that govern market behavior. It is through the combined

efforts and demands of the state, market participants, and other institutional actors that market structures are defined and market participation legitimated (Fligstein, 2001; Fligstein & McAdam, 2011).

In the U.S., states play a large role in determining how markets are shaped, and influence changes in the way healthcare is delivered (Fligstein, 2001). One way states shape the healthcare field is by its regulatory authority over the markets for professional service delivery (Abbott, 1988; Zhou, 1993). In this paper, the focus is on the role of states in the setting of rules for the delivery of healthcare services.

State-level healthcare markets evolve when individual states put in place new rules, or alter existing rules, governing market behaviors; what is termed here policy innovations (Mohr, 1969). For example, states might enact policies that expand the allowable repertoire of market behaviors available to producers (Clemens, 1997), or that clarify market rules thereby creating stability for incumbent market participants. Participants and institutional actors in healthcare markets (i.e. professionals, hospitals) can choose to support or resist the implementation of policy innovations or, in the case of market actors, adapt to policy innovations by adopting new practices or programs (Ferlie et al., 2005).

Policy innovations can occur in two ways. The first is through state governments adopting regulations or policies that allow incumbent market participants to operate in new ways (i.e. Schneiberg & Bartley, 2001). Second, where allowed, states can opt out of federal laws or repeal or abandon policies that precluded market participants from engaging in novel behaviors (i.e. Ingram & Rao, 2004). The adoption of policy innovations can unsettle markets by changing the positions of market actors, redefining how markets operate and who can compete, ultimately creating conflict among those who have an interest in markets operating a particular way.

Identifying the conditions under which markets become unsettled can help researchers predict when market innovations are most likely to be observed.

In state-level healthcare markets, numerous professions engage in conflict with overlapping professions. Overlapping professions are those that perform similar or identical activities, but approach them from a different background. Such professions attempt to establish jurisdictions in these contested domains for which they possess exclusive authority. Professions have succeeded to varying degrees in attaining settlements with overlapping professions that result in them having clear jurisdiction over a specific area of practice (Abbott, 1988). Those professions that are established and enjoy a preferred position within a market achieve high levels of status, visibility and professional privileges. Here these dominant professions are referred to as incumbent professions. Challenger professions, in contrast, are those professions in the same market as incumbents that are subject to restrictive state regulations and/or lower status and visibility than incumbents, but who seek to provide services on par with incumbents.

Given the existence of these professionally contested domains, the aim here is to understand more about the conditions under which they evolve. The research question presented here is why some states, and not others, adopt policy innovations that threaten the existing social order for overlapping professions in contested healthcare domains. Contested domains are settings where multiple groups of professionals perform similar or identical functions, but where incumbents and challengers compete over the rights to perform those tasks in markets. State policy innovation adoptions can change healthcare markets by defining what specific professions are legally able to do. Although previous research has examined the process for how overlapping professions compete for jurisdictional supremacy, this study makes two important distinctions from previous research on professional healthcare domains.

Previous research on overlapping professions has been set in geographies that are governed by uniform regulations, i.e. there was no potential for regulations to vary across states. Although previous work has recognized the state as an important battleground for professions sharing jurisdictions (Abbott, 1988), it has primarily studied the process of changing established jurisdictional boundaries across states (or in workplaces) where all within the domain are subjected to the same regulations (e.g. Barley, 1986; Reay et al., 2006). Under examination is a professional field that is subjected to the potential for regulatory variation across states. Our existing knowledge about professions assumes that all of the members in a professional field will be subject to the same professional regulations at the state level. This study contributes to the literature on healthcare market change by aiding our understanding of the conditions under which states enact policies allowing organizations flexibility in delivering specialized medical services.

Second, previous state-level work involving professions in healthcare markets has considered how incumbent professions establish and/or reinforce domains on terms favorable to themselves (e.g. Zhou, 1993), without considering the countervailing pressures existent when there is a challenging profession explicitly and simultaneously opposing change. It has been well-documented that healthcare professionals continually strive to maintain or expand their jurisdictions (Abbott, 1988) and resist innovations that threaten their status (Ferlie et al., 2005), but we do not fully understand how states regulating professional healthcare markets respond when challenger professions attempt to infringe on incumbents' legally established professional domains. This research examines how both incumbent and challenger professions influence states' adoptions of healthcare policy innovations.

The innovation being studied here is regarding professional licensing. There are two reasons for choosing professional licensing to study state-level healthcare changes. First, states have had jurisdiction over professional licensing since the 1700's. This long history of state involvement has contributed to making licensing a setting that is highly institutionalized; understanding why policy innovations are adopted in this environment will lead us to better understand important sources of localized variation in healthcare markets. Second, there is a long tradition of research on the professions and professional licensing (i.e. Starr, 1982; Abbott, 1988; Zhou, 1993), meaning that these findings build on an established body of research.

The focus here is on professional licensing in one specific healthcare domain: anesthesiology, a field filled with fierce competition between professions. By choosing anesthesiology as a setting, multiple lines of research will be extended. This work follows others interested in research on the professions by integrating the approach of management and sociology scholars (Ferlie et al., 2005; Suddaby & Viale, 2011); this work thereby contributes not only to the study of state innovations in healthcare markets, but to the professions literature as well, the intersection of which is ripe for further study (Balla, 2001).

Last, contributions here will be made more broadly to the literature on markets for professional services. Although field theory literature acknowledges that markets are capable of being changed, previous research has generally argued that markets are inclined toward stability (Fligstein, 2001), rather than change. By exploring a more nuanced approach, it is discovered that some markets are more susceptible to change than others when exposed to similar conditions; a number of potential explanations are investigated as to why this might be the case.

Institutional theory is utilized to understand the adoption of innovations in professional service markets for several reasons. It helps to explicate how the normative effects of power

influence intrastate decision-making processes. Second, it is beneficial for understanding how increasing interstate pressures to conform affect at-risk states as licensing policies diffuse (DiMaggio & Powell, 1983; Tolbert & Zucker, 1983). Furthermore, scholars have utilized tenets of institutional theory to identify the effects that collective actors have on local, state and national policy decisions (Skocpol et al., 1993; Cress & Snow, 2000; Andrews, 2001; Minkoff, 1997, 1999; Soule et al., 1999).

The remainder of this paper is organized as follows. First, a review of the literature in institutional theory is presented, focusing on markets, fields and professions, and then hypotheses are developed about conditions under which innovations are enacted. The hypotheses are then tested using ten years of longitudinal data on a professionally contested, state-level policy innovation. Under examination is the extent to which professional associations, and other relevant intrastate and interstate factors, influence states' adoption of a healthcare policy innovation. Finally, empirical results and conclusions are presented, along with the implications of these findings for research on healthcare markets.

## **Theory and Hypothesis Development**

The theory of fields recognizes that governments, organizations and markets interact to influence market stability and change. Contrary to some lines of economic thought, private organizations or individuals are not solely responsible for developing markets. The theory of fields contains important tenets with regard to key social actors and their contribution toward market evolution (Fligstein, 2001).

Healthcare markets in particular are influenced to a great extent by states. Although the delivery of healthcare in the United States was long unregulated, in the 20<sup>th</sup> century it became

highly regulated and institutionalized (Starr, 1982). As field theory explicates, markets are developed through interactions between states, institutional actors, and organizations. In the case of healthcare service markets, market evolution also depends heavily on the actions of professionals, who are key institutional actors.

Given the highly institutionalized nature of healthcare, changes are not made easily or quickly. Therefore, of special interest is what is in these markets that enables changes to take place and what increases the likelihood of state action. Consistent with field theory, key social relations exist in healthcare market between professionals, state policy makers and healthcare organizations. Each of these key actors are examined and arguments are developed about how each of these actors are likely to influence the transformation of healthcare markets, specifically through the use of professional licensing policy innovations.

Previous research on state-level policy innovations has identified two broad categories of explanations for why states innovate: intrastate and interstate characteristics. Intrastate characteristics refer to the features of a state. One such feature is population demographics. For example, the concentration of minorities within a state has influenced a state's propensity to adopt welfare reform (Soule & Zylan, 1997), while the number of liberal voters and the party affiliations of government officials has helped determine which policy innovations states are most likely to adopt (i.e. Grattet et al., 1998).

Interstate factors refer to external pressures to imitate other states' actions. For example, a state's propensity to adopt HMO regulation or licensing regulation is influenced by the number of other states that adopted similar legislation (Balla, 2001; Zhou, 1993). State policy makers have a history of looking to other states that previously adopted policy innovations to observe the effects of having adopted them (Berry & Berry, 1990).

## **Intrastate Factors**

### ***Key Institutional Actors: The Professions***

Professionals play a significant role in influencing many societal sectors, organizations, and institutions (DiMaggio & Powell, 1983; Powell, 1991). Professional associations attempt to use the prestige and power that is derived from their social status and claims to expert knowledge to influence legislative decision-makers regarding decisions about licensing (Abbott, 1988). Policy makers and their constituents are susceptible to powerful professionals, and therefore look to professionals and their associations to determine appropriate organizational forms and appropriate norms. Actors that depart from appropriate structures are likely to have trouble obtaining steady flows of resources (Meyer & Rowan, 1977). As a result, powerful professions have the ability to induce homogeneity in societal sectors (DiMaggio & Powell, 1983).

Professional associations utilize their power to establish favorable institutional arrangements (i.e. taken-for-granted practices that benefit their own interests). Once these beneficial arrangements become established, incumbent professional resistance to change and innovation is often intense, and has a profound impact on policy makers (Abbott, 1988; Jonsson, 2009; Marquis & Lounsbury, 2007). Professional associations resist the adoption of policy innovations through means such as constructing entry barriers utilizing state regulatory power (Torres, 1998) or by withholding critical resources (Goodstein et al., 1994). For example, when professional associations aid in constructing laws favoring their own interests, they make it difficult for anyone else who attempts to legally perform similar functions. Additionally, when powerful professionals do not have favorable arrangements in a state, they can threaten not to practice in needed areas, or to leave en masse to different jurisdictions (Starr, 1982).

### *Interplay Between States and Professional Associations*

State governments have a long history in the United States of being directly involved in issues of professional jurisdiction and licensing. Consistent with interest group politics, states are known to be subject to the influence of interest groups in making professional decisions (Stigler, 1971). Research has shown that occupational power and prestige have significant effects on state level decisions affecting professional practice. Higher levels of occupational prestige and higher national association age both increase the rate of occupation-specific licensing legislation (Zhou, 1993). Professional associations possessing these sources of power accumulate substantial resources and knowledge, and sophistication in organizing capabilities and interest group politics, allowing them to effectively shape and attain favorable licensing policies (Zhou, 1993). Professional associations also shape state licensing policy by developing regulations and participating on committees having jurisdiction over state regulation (Balla, 2001).

Although states are subject to the influences of professional associations in the adoption of licensing legislation when establishing markets, it is unknown how states are affected for ongoing professional jurisdiction issues; i.e. once professional licensing is established it is not clear what happens when states are confronted with adoption decisions emanating from exogenous regulatory shocks. This is particularly important when subsequently spreading policy innovations pose a threat to existing professional norms. Existing organization theory gives us insight into understanding what happens in those settings that become contested because of conflicting professional interests. The access influence model argues that collective actors “should affect policy outcomes in a number of ways beyond their effect on mobilization capacity

and protest” (Andrews, 2001; Soule & Olzak, 2004). Specifically, this model explicates that interest groups capitalize on their organizational capacity to influence policy makers by using institutionalized tactics such as litigation and lobbying. Inherent in the model is that the level of resources possessed by an organization is proportional to their level of success (Soule & Olzak, 2004). Concurrently, incumbent professionals in favored positions have to continuously maintain their dominance not only with state policy makers, but in the eyes of the public and in their workplaces as well. Professions risk erosion of their preferred status when not adequately defending their territory on all three of these fronts (Abbott, 1988).

Organizational scholars generally agree that supportive interest groups and organizations influence state policy decisions (Andrews & Edwards, 2004). However, both pro and anti-policy organizations on either side of an issue can influence policy adoption. These underlying principles are relevant to professional associations, as they utilize lobbying and litigation tactics frequently. They lobby politicians directly, or lobby committees or boards who have influence on policy makers (Balla, 2001).

Policy makers allow their own, as well as their constituencies’, interests, ideas and commitments, influence the decision making and institution building processes (Baysinger & Butler, 1985; Kosnik, 1990). Groups that support the adoption of policy innovations, and thereby promote change to the status quo, attempt to highlight their strengths and defuse potential misconceptions about why the status quo should be upheld. At the same time, interest groups that stand to benefit from the arrangements already present in the status quo are likely to undertake necessary action to resist change and protect their privileged position (Abbott, 1988). Accordingly, it is hypothesized here that a state with higher levels of incumbent (resisting) professional power will have a lower likelihood of adopting professional licensing policy

innovations while higher levels of challenging (supportive) professional power within a state will increase their likelihood of adopting professional licensing policy innovations.

*H1: Greater levels of resisting professional power in a state will decrease a state's likelihood of adopting licensing policy innovations affecting that professional domain.*

*H2: Greater levels of supportive professional power in a state will increase a state's likelihood of adopting licensing policy innovations affecting that professional domain.*

### ***Professional Heterogeneity***

The presence of multiple and conflicting professional affiliations creates the potential for differences within policy maker interests (Powell, 1991; Thompson, 1967). Exposure to such diversity makes it difficult for policy makers to reach consensus regarding potential policy decisions. Contentious changes are especially difficult to resolve, given the conflict that develops, based on divergent interpretations of the issues at hand, as well as disagreement over organizational needs and policies (Clegg, 1990; Mintzberg, 1983; Powell, 1991). Therefore, the less conflict generated in a state by spreading policy innovation, the more an interest group's agenda will resonate with, and be received by, policy makers. However, as conflict becomes more salient, power becomes more of an important tool for groups to pursue their agendas.

Professional heterogeneity measures the extent to which professional fields are uniform or contain multiple professions. In contrast to homogenous professional fields, heterogeneous professional fields consist of competing professionals (incumbents and challengers) who perform similar or identical functions. For example, overlapping professional domains exist in fields such as radiologic technology (medical radiologists vs. x-ray technicians), medicine (general practitioners vs. nurse practitioners) and accounting (accountants vs. book-keepers) (i.e. Reay et al., 2006). Incumbent professionals view others in the field as challengers, sometimes referred to

as ancillary professions (Halpern, 1992). When professional groups compete, they often frame their expertise in differing manners. They tend to compete based on “claims argued through abstract knowledge” (Abbott 1989, p. 278) as they vie for control over their domain. When claims utilizing abstract knowledge are not sufficient to create advantages for professions providing similar services, professionals attempt to differentiate themselves in other ways such as economic or efficiency advantages. When professions have overlapping functions and boundaries, ongoing battles for jurisdictional control and supremacy tend to proliferate (Abbott, 1988; Halpern, 1992).

When heterogeneous professional fields evolve and incumbents and challengers each begin to accrue more power and/or occupy stronger positions, their potential for influencing policy makers is likely to change. When policy makers are subjected to competing claims regarding professional knowledge, and their own political standing may be affected, it will likely be difficult to foster consensus among stakeholders. This is similar to other contentious contexts. For example, the professional composition of hospital boards has been shown to affect organization level change propensities; more professionally heterogeneous boards are able to undertake change less rapidly and less frequently than homogeneous boards in turbulent environments (Goodstein et al., 1994). When policy makers are faced with potential strategic changes, it is difficult to attain a consensus when their interests and conceptions of change vary. Therefore, it is hypothesized here that increasing ratios of a challenging profession relative to the total pool of providers within a heterogeneous field will increase the ability of supportive professional associations to influence policy innovations.

*H3: The greater the proportion of challenging professionals among the service providers in a contested professional domain in a state, the greater the likelihood of that state adopting licensing policy innovations affecting that professional domain.*

### ***Labor Market Constraints***

Organizations are dependent upon their environments for the acquisition and maintenance of resources (Pfeffer & Salancik, 1978). In order to maintain stable supplies of critical resources, organizations adapt to changing environments in a number of ways. Organizational responses to environmental demands vary with respect to two primary factors: the magnitude of exchanges involving a particular resource relative to an organization's total inputs or outputs, and the criticality of resources to a focal organization. Organizational responses to their resource environments are predictable to the extent that organizations can or cannot function without the resource, or based upon the presence or lack of alternative sources.

Healthcare providers depend on healthcare professionals to meet the medical needs of their constituents, and states make policy decisions accordingly. In the context of state medical policy decisions, there are important environmental variations in labor markets across states. States that have the clearest sets of labor market constraints are likely to be most responsive to potentially beneficial policy innovations (Pfeffer & Salancik, 1978). One way states' labor market needs are reflected is in the composition of their constituents, namely those that are rural and those that are urban. Rural states are known to have much different demographics when compared with more urbanized states, in addition to different stocks of human capital. Rural states have populations that are generally poorer, have more elderly and children, more uninsured and underinsured people, and are more vulnerable to economic downturns when compared to predominantly urban states (Ricketts et al., 1999). In particular, a central concern with respect to rural states is access to healthcare. Rural states have a unique set of needs when it comes to serving their populations. One of the challenges that rural states have, however, is a constrained labor market.

Due to the constraints associated with rural states' limited resource bases, the ability for state governments to facilitate the provision of adequate social services such as healthcare presents a significant challenge. Rural healthcare facilities are typically small and cannot pay for some of the more elaborate services provided by urban facilities. Specifically, many physicians and specialists hesitate to live in rural areas due to the remote locations and a lack of amenities common to urban areas (Ricketts et al., 1999). States have made many attempts at addressing these problems, including supporting medical programs that require graduates to practice in rural areas (Holliman, 2010). Adopting professional policy innovations allows states to do two important things in an attempt to compensate for these deficiencies. First, it allows them to attract a wider pool of professionals, including those wanting to practice in situations providing them with greater autonomy. Second, it allows their constituents flexibility in providing quality, affordable healthcare. Therefore, it is expected that states facing greater labor market constraints will be more likely to adopt professional licensing policy innovations that provide potential for increased efficiency and cost-savings. States with such constraints are those with larger numbers of rural healthcare facilities, since they are more limited in securing healthcare professionals than urban states, (i.e. less available human capital).

*H4: Greater labor market constraints (as evidenced by greater numbers of rural hospitals in a state) will increase a state's likelihood of adopting licensing policy innovations affecting that professional domain.*

### ***Interstate Pressures***

In addition to the influences of intrastate characteristics, the likelihood of states adopting policy innovations can also be a function of other states' behavior. Institutional theory explains how interstate forces exert pressure on a focal state's policy makers through powerful actors and norms (Meyer & Rowan, 1977; Cress & Snow, 2000). Mimetic, normative and coercive

pressures influence the adoption of numerous types of policy innovations (DiMaggio & Powell, 1983). Governing bodies use their authority to exert coercive pressure on other actors, influencing them to adopt innovations such as ISO 9000 certification (Guler et al., 2002). In addition, influential actors contribute to policy adoption by exerting normative pressure on policy makers to conform to “the way things are done” (e.g., Zhou, 1993). Mimetic forces also contribute to spreading policy innovations by creating an avenue for policy makers to reduce uncertainty when confronted with difficult decisions. Observing previous responses to similar conditions and mimicking that behavior reduces uncertainty for policy makers.

Mimetic forces in particular contribute to the increasing likelihood that at risk states will adopt spreading policy innovations. Mimetic pressures come from the prior adoptions by other states of practices that are relevant to an at-risk state; these practices become prescriptive as they are perceived as “the way things are to be done” (Scott, 2001). This pressure to conform could come from two different sources. A state could be geographically proximal to others that adopt policies, increasing the saliency of change and necessity to conform. Proximal states implementing beneficial professional policy innovations may influence other states and their professionals to push for adoption, thereby positively affecting their ability to attract resources and/or function in similar ways as other states.

*H5: A state’s likelihood of adopting professional licensing policy innovations will increase when greater numbers of contiguous states have previously adopted.*

In other cases, the cumulative number of states adopting a particular piece of professional licensing legislation tends to increase the propensity of an at-risk individual state to adopt the same policy (Zhou, 1993). Such pressures may come from others who have similar characteristics. For example, states possessing similar characteristics such as high levels of

poverty or uninsured citizens may look to others for ideas about how to address their problem. This is particularly common when there is environmental uncertainty or ambiguity, such as a recent economic downturn or federal policy change. Organizations using this type of problemistic search for solutions to unclear situations are able to identify solutions with little cost involved (Cyert & March, 1963).

In the case of a new policy and the uncertainty surrounding its viability, states are likely to consider others who are similar in responding to the diffusing policy change. Adopting policy innovations can involve changing institutional norms that have existed for extended periods of time, and require assurance that such change is legitimate and has the potential for success. Given states' prior propensities to consider other states' adoption decisions in other ambiguous contexts, it is hypothesized here that states will be subject and respond to mimetic forces when exposed to professionally contested policy innovations.

*H6: A state's likelihood of adopting professional licensing policy innovations will increase with greater cumulative numbers of prior state adoptions.*

States are likely to be influenced not only by those who are geographically close, but also by those socially proximal as well. Social proximity refers to occupying similar positions in a network or population. One way to describe these types of social actors is role equivalence (Guler et al., 2002). Role equivalence describes social actors who have similar attributes, primarily defined as "role relations" or "role sets" (Merton, 1968), or who are connected to similar types of actors (Burt, 1990). Role relations are made up of different ways actors can interact, while role sets are collections of different types of relations that actors take part in. Here relations are defined to include those that occur between states, such as the use of reciprocal professional licensing. States' role sets could therefore include the total number of licensing policies that they possess from a defined set of potential policies. Furthermore, I define

role equivalence as the overlap in the role sets of actors (Guler et al., 2002; Winship & Mandel, 1983). These actors occupy similar network positions stemming from common memberships or utilizing similar solutions to address common problems, such as allowing increased autonomy for advanced practice nurses.

Role equivalent actors operate in similar networks or markets, but not necessarily in the same geographic regions. As role equivalent actors, states are likely to adopt similar policies, or imitate, due to two primary influences: competitive performance improvement (Burt, 1997) and isomorphic processes within industries or fields (Fligstein, 1985). From a competitive perspective, similar positions within social structures “create a competitive frame of reference” (Burt, 1997: 345). If certain states utilize new policy innovations and attain positive results, role equivalent states are likely to observe this and act accordingly to serve their constituents as well (DiMaggio & Powell, 1983). As a result, it is expected that states will be more likely to adopt professional licensing policy innovations as the number of prior role equivalent state adoptions increases.

*H7: A state’s likelihood of adopting professional licensing policy innovations will increase the greater the number of role equivalent states that have previously adopted.*

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Insert Figure 1 here  
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### **Empirical Context: State-level Anesthesiology Policy Decision**

Markets for healthcare in the United States have come under increasing scrutiny in recent years, as healthcare costs have soared, and politicians have contentiously debated healthcare reform. One segment of the healthcare debate that has been in the public eye is the field of anesthesiology. Two different types of professionals practice independent anesthesia in the

United States – Certified Registered Nurse Anesthetists (CRNAs) and Medical Doctors of Anesthesiology, or Anesthesiologists (MDAs), each taking different paths to becoming medical professionals. CRNAs have a nursing and critical care background, typically with an intensive three-year training program. MDAs, in contrast, have a medical school background with extended rotations in anesthesia, as well as rotations in other disciplines such as family practice or obstetrics/gynecology.

The field of anesthesiology has seen numerous changes over the last century. Although nurse anesthetists were the first ones to focus specifically on the delivery of anesthetics starting in the 19<sup>th</sup> century, medical doctors have exerted more control over the regulatory development of the field in recent history. As the field became more defined and professionalized, MDAs attempted to assert themselves as the dominant providers in the field. In one example of the tactics utilized by MDAs to dominate the field, they attempted unsuccessfully to completely outlaw the CRNA profession (Thatcher, 1953). Subsequently they have attained success to varying degrees by pressuring hospitals, nursing schools, and legislators to either limit CRNA scopes of practice or frame MDAs' skills and training as superior.

The competitive nature of anesthesiology led each state to develop its own set of laws regulating the practice of anesthesiology. Key variations across states centered on the ability of CRNAs to practice with or without “medical supervision” and to bill third parties such as Medicare directly. In most states, some level of physician oversight or supervision was required. This practice usually amounted to a surgeon or anesthesiologist signing off on a case (implying that they “supervised” or “directed” it) that was often performed solely by a CRNA. Even though CRNAs were trained and certified to perform anesthetics independently, MDAs successfully convinced many in positions of power that CRNA supervision was necessary.

However, this costly and inefficient duplicative practice eventually led to a federal debate as to the necessity of physician oversight, culminating in the 2001 Medicare law change permitting states to decide what their anesthesia oversight policy would be.

This law is the product of a long history in the contentious anesthesia medical supervision/professional boundary debate (see Halpern, 1992). Over time laws have continued to change with regard to how independently CRNAs are allowed to legally practice their trade. Prior to 2001, the default status for each state was declared to be CRNAs needing “medical supervision” by a physician in order to be allowed to practice and be fully reimbursed for Medicare services. However, with the 2001 ruling, federal legislators agreed to defer the decision to the governor of each state (AANA, 2011), whether to adopt an “opt-out” status, which removes the requirement for physician supervision of CRNAs.

The procedure for a governor to adopt the opt-out policy innovation involves sending a letter to the Center for Medicare & Medicaid Services (CMS), certifying that the state performed three tasks: 1) they consulted with the State Medical Board, 2) they consulted with the Board of Nursing and 3) they determined that adopting this policy innovation is consistent with state laws and is in the best interests of the state’s constituents (AANA, 2011). Adopting this policy innovation does not require individual hospitals or other medical facilities within the state to change their practices or to use any particular anesthesia-staffing model, but it gives them flexibility in addressing their own particular needs. Many opt-out states to date have touted the efficiency and cost savings attained from this policy innovation (AANA, 2011).

The opportunity for cost savings in this context is great. Anesthesiologists were recently listed as the top paying profession in the United States (Braverman & Jeffries, 2009). In addition, the delivery of anesthetics overall has been shown to be ripe with cost reducing

potential (Hogan et al., 2010). Despite research demonstrating the potential for significant cost savings and equally proficient care through the use of anesthetist-only models, federal, state and private insurers, in addition to policy makers and administrative decision makers, have not universally embraced the use of independent CRNA models. As Figure 2 demonstrates, only 16 states have opted out in the first ten years after the 2001 ruling (AANA, 2011).

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Insert Figure 2 here  
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The 2001 Federal anesthesia ruling highlighted the longstanding debate over which anesthesia providers are more effective, and whether physicians or anesthesiologists are truly needed to supervise anesthetists. This debate has continued since 2001 at both the national and state levels, and has become even more contentious recently. For example, recent decisions by the governors of California and Colorado to opt out of anesthetist supervision have been received with stern opposition; in each state, anesthesiologist associations appealed the decisions in court to no avail (AANA, 2011).

## **Data and Methods**

### ***Sample***

To test these hypotheses, a longitudinal compilation of state-level and anesthesia-specific data was obtained and assembled from various sources. Data was obtained from the American Association of Nurse Anesthetists (AANA, the CRNA professional association) website, from association headquarters for both anesthesia professions (American Society of Anesthesiologists,

or ASA, and the AANA), the government sponsored medical employee report called ARF (Area Resource File), and from the American Hospital Association website.

Aggregate provider information was obtained from three sources: the ASA, the AANA and the ARF. Information on all 50 US states was collected for the period 2001 - 2010, to capture observations subsequent to the passage of the 2001 Federal anesthesia legislation. The original data set includes 500 state-year observations. However, because 21 states have medical, nursing, and/or ambulatory laws that prohibit the adoption of this policy innovation, they were omitted from the at-risk set. Once a state adopted the policy innovation, they were also subsequently eliminated from the data set, leaving 190 state-year observations in the final analysis.

### ***Dependent Variable***

***Opt-out*** captures state adoptions of the 2001 Federal Anesthesia Opt-out policy. Opting out of this law is synonymous with states adopting a policy innovation enabling state medical provider organizations, such as hospitals, surgery centers, etc. to have complete flexibility in determining how to staff their anesthesia function. This dichotomous variable is coded '1' in the year a state opts out (adopts) and is coded '0' otherwise.

### ***Independent Variables***

***Resisting Professional Power*** captures the power of state MDA associations, as MDA associations have strongly resisted the removal of medical supervision requirements for CRNAs. Resisting professional power is measured as the number of licensed MDAs per capita in each state during each year of the study. This measure is consistent with previous research using

physician influence as an explanatory variable (Ad Hoc Committee to Defend Health Care, 1997; Hill, 1998). The ASA provided total national numbers for membership, which aligned closely with the cumulative state-by-state numbers collected from ARF. Since the ASA did not track state-by-state membership numbers, the ARF data was used.

***Supportive Professional Power*** captures the professional power of CRNA state associations, as CRNA associations are supportive of states adopting the Federal Opt-out policy. This variable was operationalized as the number of licensed CRNAs per capita in each state during each year of the study. This variable was taken from the AANA data, whose membership represents nearly all of the licensed CRNAs in the United States (AANA, 2011).

***Labor Market Constraints*** is a count of the number of rural hospitals, in a given year in each state. This is indicative of the type of healthcare labor market that exists in a given state. Rural hospitals are a big part of the economic and social identities of rural states. Furthermore, rural hospitals are of major importance in providing health services to rural areas, and are highly sensitive to public policies (Moscovice & Stensland, 2002). In states with high numbers of rural hospitals, policy makers are generally more constrained in their ability to sustain a balance between the demand for healthcare services and the ability to provide them. Therefore, high numbers of rural hospitals means that states must consider policies to create alternate ways of providing healthcare.

***Contiguous State Adoptions*** is the number of states sharing a border with a focal state that have previously adopted the Federal Opt-out policy. This variable measures the extent to which states are influenced to opt out by the actions of other states in geographic proximity. Variability in the numbers of contiguous states is addressed in the control variables section.

***Role Equivalent Adoptions*** refers to the number of states with similar role sets that previously adopted this policy innovation. According to the arguments presented here, states having a history of supporting advanced practice nursing autonomy are more likely to opt out of the Federal supervision policy. This variable was operationalized as the sum of the number of states that allow the maximum amount of independence to Nurse Practitioners (NP), which is another group of advanced practice nursing professionals subject to rigid physician oversight regulations. States permit NPs varying levels of autonomy with respect to medical oversight; some states allow complete independence from supervision, and others allow some or none.

***Cumulative State Adoptions*** is a discrete variable representing the count of the number of U.S. states that have adopted this policy innovation within the previous three years. This variable measures the extent to which states are influenced by an interstate contagion effect. The previous three years were measured for two reasons: first, it captures the most recent and relevant innovation adoption activity, which is likely to have the strongest mimetic effect on a focal state, and second, using a three-year rolling window removes the multi-collinearity issues present when capturing all adoptions over the observation period.

### ***Control Variables***

A number of variables were included to control for alternative explanations for the dependent variable. To control for the effects of political party, a variable was included for the presence of a ***Republican Governor***, coded '1' during each year in the tenure following when there is a Republican governor and '0' in years when there is a governor from a different party. Also included here is a measure of state ***Nursing Environment***, which measures the level of professional accommodation afforded to nurses in a state. States having a history of supporting

advanced practice nursing autonomy, as well as states that have shown a propensity to allow efficient medical service practices are more likely to opt out of the Federal supervision policy. Role equivalence is the sum of two state attributes: Pain Management Prescribing (PMP) and Nurse Practitioner Independence (NPI). These two variables are dichotomous, coded '1' for possessing an attribute or membership in a network and '0' otherwise. States score will range from 0 to 2, making each state a member of one of three role equivalent groups. States with higher scores are more likely to opt out.

The 'pain management prescribing' variable indicates whether or not a state allows particular advanced practice nurses to prescribe pain medication without any restrictions. 'NP independence' is a variable representing states that allow the maximum amount of independence to Nurse Practitioners (NP), which is another group of advanced practice nursing professionals subject to rigid physician oversight regulations. States permit NPs varying levels of autonomy with respect to medical oversight; some states allow complete independence from supervision, and others allow some or none. This arrangement is the same one that is described in the role equivalent adoptions variable.

To control for a state's propensity to innovate, the variable *Walker Innovation Score* was included, which is often used in state policy innovation research (Walker, 1969). This score is a function of the speed and spatial patterns according to which states tend to adopt new legislative actions. Given the time frame within which the scores were originally developed, Alaska was not given a score. Therefore, the mean innovation score of the other states was substituted for Alaska in this study.

Because states may make different policy adoption decisions when faced with weak economic conditions, economic uncertainty was controlled for by using the variable *Recession*,

coded '1' in years recognized as containing a recession by the National Bureau of Economic Research (NBER), and '0' otherwise. Because states vary in the number of border states, the analysis here also controlled for the number of *Contiguous States* sharing a border with a focal state. Alaska and Hawaii were counted as border-states to Washington and California, respectively.

Logistic regression was utilized to analyze these data given the nature of the dichotomous dependent variable and the interest in measuring adoption timing. After performing a Hausman test, it was determined that a fixed effects model was not necessary. The xtlogit command in Stata was used to account for the non-independence of observations. Several multiple logistic regression models were developed; a baseline model includes all control variables, and is representative of a state's propensity to adopt this opt-out policy. Subsequent models add variables measuring the effects of power and heterogeneity using CRNA and MDA association membership as well as intrastate and interstate factors.

## **Results**

Table 1 includes descriptive statistics and bivariate correlations. Table 2 shows the results of logistic regression models. Model 1 is a baseline model of seven control variables, measuring the effects of alternate social, economic and political explanations for policy adoption. Model 2 adds the power of both anesthesia professional associations. Model 3 includes the ratio of CRNAs to total providers and controls for population. Model 4 adds the number of rural hospitals, while Model 5 adds the interstate mimetic pressure variables.

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Insert Tables 1 and 2 here  
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Model 2 tests Hypotheses 1 and 2. Hypothesis 1, predicting that increasing resisting professional power in the form of MDAs per capita would reduce a state's propensity to adopt professional policy innovations, was supported. The presence of greater numbers of MDA's per capita resisting the adoption of new policies or practices, and thereby reinforcing the status quo, is a strong determinant of state policy adoption behavior. Hypothesis 2 was not supported. The coefficient for greater supportive professional power (represented by CRNAs per capita) was positive as expected but not significant.

Model 3 includes the CRNA ratio and population variables to test Hypothesis 3, which predicted that the influence of challenging professional associations on state adoption propensities would increase as their relative, rather than absolute, power increased. Hypothesis 3 was strongly supported. Higher ratios of CRNAs to overall anesthesia providers increased a state's propensity to adopt this professional licensing policy innovation. In model 4, Hypothesis 4, which predicted that labor market constraints would increase a state's propensity to adopt, was supported. Constraints on the availability of human capital, as indicated by the number of rural hospitals in a state, increased the propensity of states to adopt this professional licensing policy innovation.

Model 5 adds the three interstate factors to test Hypotheses 5-7. Among these, only Hypothesis 5 was supported. Consistent with previous policy innovation research on the effects of regional influence on states policy adoption decisions, we find that the number of bordering states previously adopting a policy innovation had a positive effect on the subsequent policy

behavior of at-risk states. Neither Hypothesis 6 nor 7 were supported. Higher numbers of role equivalent states previously adopting the opt-out legislation and greater cumulative numbers of recent policy adoptions in the past three years did not increase the propensity of at-risk states to adopt the same policy innovation.

## **Discussion**

Some organization theorists have previously undertaken work to identify how healthcare markets change. In this body of work, however, the role of the state in influencing healthcare markets has been underexplored. The state plays an important role in healthcare markets through its role in managing professional licensing. This is especially important in cases where specialist professions are making claims to directly overlapping jurisdictions. Given that there are many domains in which multiple professions overlap, and competition among them is increasing as demographics, technology and environmental conditions change, this paper makes contributions not only to organization theory and the study of the professions, but also to the practice of healthcare management and to public policy.

Although this work is not the first to examine healthcare market outcomes where there are overlapping professions (i.e. Reay et al., 2006), as well as where incumbents have attempted to maintain control of ancillary professions (Abbott, 1988; Halpern, 1992), the state's role is in need of systematic examination. This paper is among the first to develop a theoretical explanation for why states intervene in markets for healthcare services to determine who among overlapping professions may compete.

The power of incumbent resisting professional associations in the field of anesthesia is effective at reducing the likelihood of states adopting professional licensing policy innovations.

However, anesthesiologists' power and control over this professional domain is not absolute; nationwide they have lost some control of the field of anesthesia, given the adoption of the opt-out law in 16 states. There appear to be certain conditions when states can marshal the resources necessary to overcome anesthesiologist's resistance to adopting this policy innovation (Mohr, 1969); in cases where labor markets are constrained, where states have a history of accommodation to the nursing profession, or possibly a weak medical association or when states are able to reduce uncertainty by observing the behavior of neighboring states.

Since the early 20<sup>th</sup> century, physicians have benefitted from major cultural shifts in the United States. Industrial, demographic and economic changes contributed to greatly improved status of the medical profession and the ability to shape markets for professional services. These findings suggest that the cultural authority yielded to the field of medical doctors as a whole (Starr, 1982) remains powerful and effective for specialists such as anesthesiologists, even in the face of cost-efficient alternatives (i.e. Hogan et al., 2010).

These findings also suggest that the relative strength of challengers in anesthesia continues to alter resisting effects of incumbents on policymakers that is observed or implied in other contexts (Goodstein et al., 1994; Jonsson, 2009). This study provides strong support for the idea that incumbent professional resistance significantly and effectively shapes public policies when incumbent professionals oppose and have adequate power to contest policies (Jonsson, 2009; Marquis & Lousbury, 2007). This professional power, which has been observed at the national level, exists also at the state level and reduces the likelihood of states adopting policy innovations unfavorable to incumbent professional associations, even in the presence of powerful supporters.

Here it was found that CRNA professional associations appear to have been less successful than the incumbents at influencing state policy makers. Existing theory would lead us to believe that collective actors, such as supportive professional associations, acting as institutional or policy entrepreneurs are able to influence the adoption of changes at the policymaker level (Mintrom, 1997). Yet these findings suggest there are limits to the ability of such entrepreneurs to influence beneficial policy changes in heterogeneous domains. Though CRNAs stand to benefit from the innovation under observation, and CRNA professional associations possess similar levels of human resources and lobbying capabilities as those resisting this innovation adoption, greater CRNA power does not on its own increase a state's likelihood of adopting innovations.

Existing theories of collective action lead us to believe that powerful, supportive collective action contributes to the adoption of economically beneficial policy innovations. However, in this case supportive collective actors with substantial incentive and lobbying power were unable to unilaterally achieve success. Rather it was the relative power of challenger organizations that influenced states' policy adoption behaviors; challenging professions with within states are more likely to influence policy makers to act when their power is more balanced with incumbent professionals. This finding makes for a potentially fruitful contribution to the organizations literature. Future research could investigate the tactics used to determine if, in fact, there are significant strategic or tactical differences under high and low challenger power conditions. In addition, future research could examine how relative power is achieved, and investigate the conditions under which these conditions appear.

Although the power of professional associations provides one explanation for state licensing policy innovation adoptions, another intrastate factor, the existence of labor market

constraint, also contributes to the repeal of CRNA supervision requirements. The need for scarce human capital and the flexibility in utilizing human resources increased the likelihood of states adopting opt-out legislation. Greater amounts of human capital needs, as indicated by the number of rural hospitals in a state, contributed to an increasing propensity for states to opt-out of the physician oversight legislation.

### ***Interstate Effects***

The likelihood of states making changes in healthcare service markets is influenced not only by their own demographics and resource availability. Consistent with institutional theory explanations, mimetic forces generated by geographically proximal states promoted the spread of professional licensing policy innovations. However, no support was found here for the effects of normative isomorphic forces as measured by the cumulative number overall adoptions. This finding contradicts previous research on states' professional licensing action, which found licensing legislation spread from state to state on a national level over a 60-year period – more states adopting placed increasing pressure on at-risk states to adopt similar policies (Zhou, 1993). These findings may provide clues about where the boundaries lie in relation to the influence of isomorphic forces in professional licensing, and innovations more generally. Once one set of norms and policies are established within heterogeneous professional domains, subsequent modifications to those policies may be highly contingent on the specific factors that are relevant to each state.

### ***Rationalized Myths in Contested Domains***

Increasing our understanding of why (or why not) policy innovations are adopted in contested healthcare fields is an important contribution of this study. As MDA associations have worked with states to convert their norms into coercive forces such as legislation regulating the

practice of anesthesiology, they have constructed “rationalized myths” (Meyer & Rowan, 1977) claiming that their norms are superior to those of CRNAs, and need to be accommodated by legislative bodies. In informal interviews conducted with anesthesia providers and support personnel in multiple states (some opt-out states and some not), it was found there were widely varying perceptions and knowledge regarding the MDA-CRNA relationship. MDAs have attempted to construct and maintain cognitive legitimacy with regard to their superiority and power, and have had success to varying degrees. Some healthcare professionals in hospitals that have experience with CRNAs working independently are perplexed by the need for MDAs in supervisory roles and their increased costliness. On the other hand, those in hospitals never exposed to independent CRNAs are unaware that they can legally work free of physician oversight.

Creating and maintaining cognitive legitimacy appears to be a key success factor in this professional field. Incumbent professional groups pursuing and maintaining positions of authority and power rely on the construction of collective beliefs that reinforce their privileged status, regardless of whether or not the beliefs are either complete or accurate. As a result, maintaining this rationalized myth appears to be critical to sustaining higher pay and supervisory roles for MDAs. If policy makers and constituents alike believe collectively that MDAs are needed to supervise CRNAs, in addition to believing that their training and outcomes are superior, they can justify incurring substantially higher costs. In the case of anesthesiology, however, there is empirical evidence suggesting that these collective beliefs are not completely accurate (Dulisse & Cromwell, 2010; Hogan et al., 2010).

Physicians normally occupy important positions on boards and committees, and therefore determine policies impacting various fields such as anesthesiology. Furthermore, these types of

arrangements are important to maintaining influence at the state level. Once laws are established, it is difficult to alter them, consistent with the policy status quo bias known to exist in public policy arenas (Ragusa, 2010). Despite commitments to serve the best interests of all constituents, this study confirms that policy makers are susceptible to the tactics of the most powerful interest groups.

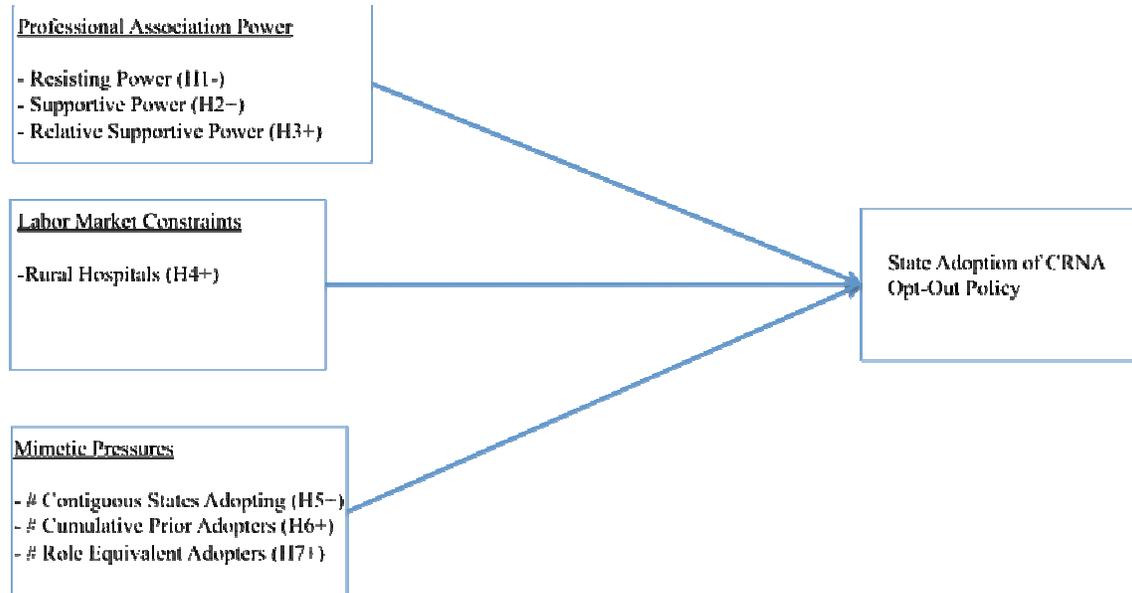
### ***Limitations***

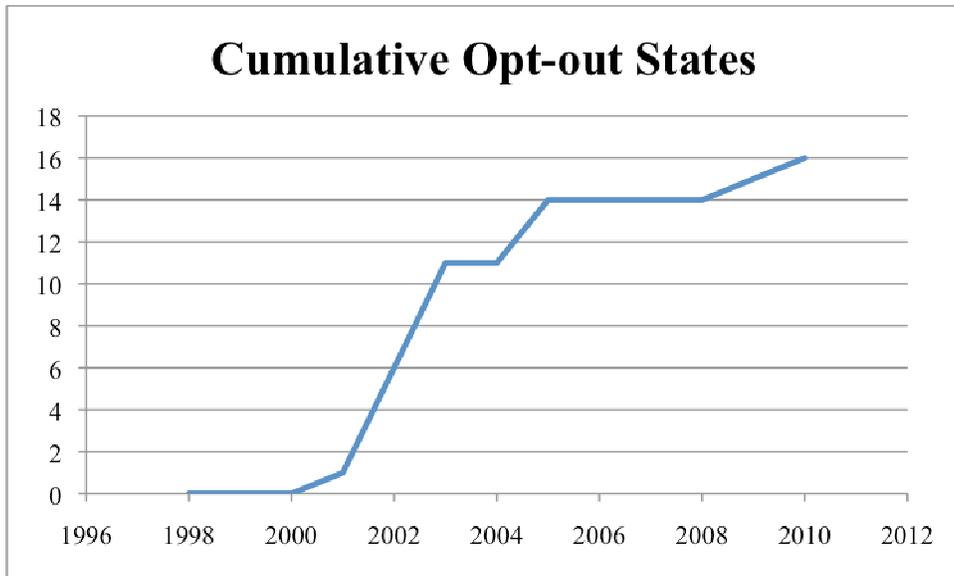
This study is not without limitations. Different measures of power, such as national professional association age and occupational prestige, have been used in other professional association research. Given that there are only two professions in this study and therefore little variation on those measures, it was determined that the best and most feasible way to measure professional power was as the concentration of professionals within a state. It may be that different measures of power would yield different results, though these findings were consistent and robust in all of the models that were tested.

Furthermore, while there is some evidence that the policy innovation in the contested professional domain studied here is economically efficient and cost saving (Dulisse & Cromwell, 2010; Hogan et al., 2010), there is still debate within the medical field about the ubiquity of this fact. As with many professional domains, not all professionals within a field are equal. In the field of anesthesiology, some MDA's are better than others, and the same can be said for CRNAs. There may be some geographic areas where there are concentrations of CRNAs that are not interchangeable with MDAs, and vice versa. CRNA training often relies on MDAs and the availability of opportunities, and therefore CRNAs may not have the same opportunities to practice independently as do MDAs. This has purposive historical precedence as MDAs have at

times in the past deliberately withheld CRNA training in order to protect their field (see Halpern, 1992). However, the tacit admission within this context is that both anesthesia providers are adequate, as federal regulators ultimately found no reason to systematically disallow CRNAs from practicing independently. Therefore, it is reasonable to infer that these premises are accurate in assuming that this policy innovation can save cost, and the domain is truly overlapping and the providers are potentially interchangeable.

**Figure 1: Conceptual Model**





**Figure 2: Cumulative State Opt-out Policy Adoptions**

**Table 1: Descriptive Statistics and Bivariate Correlations**

Variable	N	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Adoption	190	0.09	0.29														
2. Republican governor	190	0.58	0.49	-0.07													
3. # Contiguous States	190	4.61	1.56	-0.04	-0.14												
4. Walker Innovation	190	0.45	0.09	0.03	-0.16	-0.05											
5. Recession	190	0.39	0.49	-0.17	-0.09	0.02	0.01										
6. Nursing Environment	190	0.38	0.65	0.36	-0.05	-0.14	-0.07	-0.00									
7. MDAs per 10,000 pop.	190	14.17	3.26	-0.20	-0.01	-0.01	0.46	0.03	-0.10								
8. CRNAs per 10,000 pop.	190	12.77	8.14	0.04	-0.10	0.12	-0.27	-0.01	-0.31	-0.52							
9. Population/10,000	190	6.88	7.58	-0.11	-0.00	-0.04	0.31	0.03	-0.33	0.06	-0.22						
10. CRNA ratio	190	0.44	0.17	0.09	-0.08	0.06	-0.32	-0.00	-0.22	-0.69	0.94	-0.24					
11 # of rural hospitals/10	190	4.37	3.65	0.04	-0.03	0.20	-0.27	-0.01	-0.22	-0.41	0.22	0.41	0.35				
12. Role Equiv adoptions	190	3.71	2.75	-0.05	-0.03	0.11	-0.00	0.03	-0.11	0.47	-0.02	0.08	-0.16	-0.12			
13. Contiguous adoptions	190	0.64	0.91	0.17	0.05	0.22	0.06	-0.13	0.05	0.24	-0.13	0.01	-0.26	-0.02	0.42		
14. Cumulative adoptions	190	4.04	3.97	0.04	0.13	0.02	-0.00	-0.57	-0.12	-0.12	-0.02	0.06	-0.05	-0.01	0.30	0.29	

**Table 2: Logistic Regression Models of State Policy Innovation Adoption Propensity**

Independent Variable	Model 1 Controls	Model 2 Association Power	Model 3 Provider%	Model 4 Rural Hospitals	Model 5 Full Model
Republican governor	0.57 (0.58)	-0.83 (0.66)	-0.54 (0.63)	-0.50 (0.69)	-0.94 (0.83)
Contiguous States	0.10 (0.18)	0.20 (0.20)	0.19 (0.19)	0.15 * (0.20)	-0.19 (0.28)
Walker Innovation	0.31 (0.38)	1.29 * (0.57)	1.14 * (0.57)	1.69 ** (0.67)	1.93 * (0.87)
Recession	-2.06 ** (0.83)	-2.63 (0.97)	-2.59 ** (0.95)	-2.77 ** (1.04)	-3.04 ** (1.19)
Nursing Environment	1.62 *** (0.39)	1.96 *** (0.53)	2.57 *** (0.61)	2.51 *** (0.65)	2.32 *** (0.70)
MDAs per capita		-0.35 * (0.17)		-0.30 # (0.18)	-0.79 * (0.33)
CRNAs per capita		0.05 (0.05)		0.08 (0.06)	-0.02 (0.08)
Population/10,000			0.06 (0.06)		
CRNA Ratio			8.33 ** (2.79)		
# rural hospitals				0.03 * (0.01)	0.04 * (0.02)
# Contiguous adoptions					0.93 # (0.53)
# Cumulative adoptions					-0.16 (0.13)
# Role Equiv. adoptions					0.35 (0.26)
Constant	-4.51 * (2.15)	-5.47 (3.82)	-13.53 *** (4.37)	-10.13 * (4.97)	-3.37 (6.12)
Chi Square	28.53	41.37	40.30	45.16	53.69
Prob>Chi Square	0.00	0.00	0.00	0.00	0.00
d.f.	5	7	7	8	11

Values are unstandardized regression coefficients. Standard errors are shown in parentheses. There were 190 state-years observed and 16 adoptions.

# p <.10; \* p <.05; \*\* p <.01\*\*\*p<.001; significance levels are two-tailed for control variables and hypothesized effect.

## CHAPTER THREE

### STAKEHOLDER INNOVATION IN UNIVERSITIES: HOW POWERFUL PROFESSIONS AFFECT TRAINING OPPORTUNITIES IN HIGHER EDUCATION

#### **Abstract**

Given the difficulty with meeting the healthcare needs of the entire US population, an important set of questions centers on the production system of healthcare providers. In the US, provider shortages are met with increasing numbers of “mid-level providers” such as Nurse Practitioners, Physician Assistants and Nurse Anesthetists (CRNAs). However, there are still widespread objections to the use of such professionals; medical doctors raise many of these objections. In this study, I examine the predictors of adoption of the resulting increase in educational requirements within the population of CRNA schools.

## **Introduction**

Access to healthcare in the United States has become an issue that is highly visible and contentious among policy makers, patients, healthcare facilities and practitioners alike. As new healthcare law has been debated and passed in the form of the American Affordable Care Act (ACA), many uncertainties have arisen with regard to particular issues addressed within the law. Although the ACA is the most recent attempt at fixing healthcare issues, it is not a new debate. There have been numerous attempts at addressing these issues. Among the most important issues is cost (Mahon et al., 2013).

US healthcare costs have continued to rise dramatically on a consistent basis, and have been addressed in a number of ways as pressure has mounted on policy makers. Given the number of new participants enrolled in healthcare plans as a result of the ACA (in excess of sixteen million), the healthcare system has to absorb many additional costs. Furthermore, increasing patient loads means that there are increasing demands for healthcare providers as well. One way that policy makers have attempted to address these two issues is by promoting the use of more “mid-level providers”.

Mid-level providers (also known as ‘ancillary professions’ or ‘alternate providers’) are those healthcare service providers who are trained in a different manner than are Medical Doctors (MDs), yet are able to provide similar, or identical care for patients for less money than MDs. Together with their MD counterparts, mid-level providers create overlapping professional jurisdictions (Abbott, 1988; Halpern, 1992). Examples would include Nurse Practitioners (NPs), Physician Assistants (PAs) or Certified Registered Nurse Anesthetists (CRNAs). NPs are able to provide primary care services where there are shortages of MD primary care providers. This occurs often in rural areas, for example, since it is often hard to attract MDs to these areas; in

fact, there is also a general overall shortage of MDs across the country (Hart et al. 2002; Furlow, 2012). The use of NPs addresses both the cost and supply issues. Not only are NPs generally more cost effective to utilize, they can be trained at less than ten percent of the cost of training an MD. The ACA provides incentives for schooling as well as for working in underserved areas (Furlow, 2012).

Despite the benefits achieved through the use of this strategy, it is often a slow and difficult process to get mid-level providers accepted as a legitimate alternative (Reay et al., 2006). Resistance to the use of mid-level providers comes largely from physicians; it often takes a crisis such as a shift in the numbers of practitioners, excessive cost pressures or public outrage to initiate such a comprehensive change (Starr, 1982; Reay et al., 2006). Given the tenuous nature of the resulting demand for mid-level providers, it begs the question regarding how training schools adapt to and plan for these environmental changes. If the healthcare system needs their students, but physicians put up so much resistance so as to minimize their opportunities, how do schools respond?

## **Research Setting**

Although the use of providers such as NPs helps to address cost and shortage issues within primary care, this is only one area in the provision of healthcare. The need for specialists is also large and growing. As the number of surgical procedures performed has increased dramatically, one particular discipline that has experienced substantial increases in demand is anesthesiology. The field of anesthesiology is comprised of providers from two primary disciplines. CRNAs are trained and licensed to provide anesthesia to patients independently, just as their counterparts are (MDAs, or Medical Doctors of Anesthesiology). CRNAs provide over

34 million anesthetics on an annual basis, and provide anesthesia equally as safely as MDAs (AANA, 2013). CRNAs possess backgrounds in nursing and critical care, while MDAs are trained in a traditional medical school setting. In spite of these facts, MDs have long fought to keep CRNAs out of the public eye, and to keep them from fully utilizing their skills independently (Halpern, 1992; Manchikanti et al., 2012). CRNAs are restricted in some states and facilities as to how independently they can function. Depending on which state CRNAs practice in, they may or may not have to be “medically supervised” by an MD during the administration of anesthesia. However, CRNAs have aimed to change such arrangements. The anesthesiology battle is at the center of this paper.

Those who are concerned about the use of mid-level, or alternate providers, cite safety concerns (attributed to differing educational requirements) when arguing against increased usage and independence. MDAs use this on a consistent basis as justification for the need to supervise CRNAs, and limit their independence (Manchikanti et al., 2012). Over the course of the last century, MDAs have used many tactics to exert control over the field of anesthesiology. Their tactics have included, among others, attempts at outlawing the use of CRNAs through the court system, refusal to train CRNAs in hospitals and preventing CRNAs from performing difficult, more visible procedures in medical facilities (Halpern, 1992). As a result, MDAs have convinced many in power to favor them; this has caused MDAs to be in favored positions with regard to control of the anesthesiology domain. MDAs have accrued power with their positions on hospital boards and favor among public policy makers, resulting in the formation of policies allowing MDAs to control decisions regarding who can practice, as well as where and how.

MDAs’ grip on the domain has lessened slightly in the past ten to fifteen years. Federal lawmakers have given state governors some latitude with respect to how CRNAs can be used

(Feyereisen & Broschak, 2013). Given the current focus on cost reduction and increased access to healthcare, it has become more important to understand the dynamics within such overlapping professions. One key area that needs to be addressed is examining how alternate providers are trained. As I noted earlier, these alternate providers are generally less expensive to train than MDs, yet provide services on par with the MDs. Therefore, in this paper I will examine the evolution of one such population of schools – CRNA training schools.

Despite steady, long-time demand for, and larger numbers of, CRNA graduates, increasing pressure from MDs has forced CRNAs as a profession to change their schooling formats, and increase their educational requirements. These pressures resulted in substantial changes within the population of training schools; many of the schools were forced to close while others have had to be resourceful and creative to keep schools open. I will examine how schools responded to the environmental change, as well as the factors involved in explaining why some schools survived and others did not. Therefore, the research question guiding this research is:

- 1) “How do mid-level provider professional training schools respond to environmental change?”

Given the dynamics in play, with powerful professions battling to control the production of alternative providers, this paper has the potential to contribute to some important areas of research and practice. It has implications for those interested in public policy, higher education, sociology of the professions, and healthcare administration.

## **Literature Review**

In order to clarify my general area of study, the field of healthcare, it is important to identify three broad components and their characteristics: environments, healthcare organizations and professionals. In the following paragraphs I will explicate specific phenomena, causes, consequences, and levels of analysis that are relevant to understanding change in the field of healthcare. In particular, it is important to highlight the fluid relationship between professionals and organizations in understanding how healthcare organizations adapt to environmental change.

### ***Environmental Change in Healthcare***

Healthcare organizations have long been subjected to shifting forces, both within and external to their boundaries. The literature on healthcare organizations is quite substantial, and is descriptive of how organizations have changed and adapted to such forces (Fennell & Alexander, 1993; Scott et al., 2000). Although healthcare as a field is known to be highly institutionalized and resistant to change, there are segments within it that undergo substantial change in relatively short periods of time (Scott et al., 2000).

Examples of environmental change in the healthcare field include regulatory changes, changes in reimbursement policies, healthcare costs, patient expectations, provider characteristics, technological innovation, population demographics and major diseases (Fennell & Alexander, 1993). Scott et al (2000) focused on local as well as broader environments; they were one of the only groups of scholars to investigate the effect of populations of organizations on others. Most studies focus on changes within one population, such as nursing homes (Lu & Wedig, 2013) or even within a particular organization such as a hospital (Ford et al., 2006).

Included within discussions of environments are distinctions between material resource and institutional environments. Examples of material resource issues would be the supply of physicians or technical requirements (Garson, 2013). Others refer to them as technical and institutional environments (Meyer & Scott, 1983). The technical environment broadly speaking is related to the production and market exchange of good and services; the institutional environment is the elaborate rules and requirements that organizations must conform to if they are to receive the social and political support, as well as the legitimation needed to survive. Hospitals, which are key providers of healthcare, are subjected to both (Alexander & Scott, 1984).

Studies of US healthcare organization changes include either strategic change or environmental selection as drivers of change (Fennell & Alexander, 1993; Selsky et al., 2007). Kaluzny and Hernandez (1983) labeled these as the rational and population ecology models. Both strategic choice and ecology scholars focus on environmental change as a key determinant of organizational change. Strategic choice scholars attempt to explain organizational outcomes based on individual agency, while organizational ecology scholars hold that environments select organizations for success and failure based on fit with their environments. Ecologists have studied hospitals, hospital federations, rural primary care centers, and medical practice organizations in order to understand how organizational populations are affected by environmental change.

Three aspects of technical environments help to explain change in medical care organizations: sociodemographic, technological, and market changes, i.e. elderly, nature and cost of medical technology, or medical market structures. Institutional environments include regulatory change (also known as coercive isomorphism), change in the medical profession and

change in the normative environment, which reflect normative isomorphism (DiMaggio & Powell, 1983). Studies on the transformation of institutional norms and beliefs supporting the medical care sector are highly informative to organization theory and necessary (Scott et al., 2000).

### ***Types of Organizations Studied***

The field of healthcare includes many types of organizations, but the primary focus of the literature on change and adaptation in healthcare organizations has been on those that are part of direct healthcare delivery systems. Healthcare delivery systems include organizations such as hospitals, Health Maintenance Organizations (HMOs), and Home Health Agencies (HHAs) (i.e. Alexander & Amburgey, 1987). Scott et al (2000) included five types of organizations in their wide-ranging, longitudinal healthcare project. In addition to including the previous three types mentioned, they studied end-stage renal disease centers (ESRDCs) and multihospital or integrated health systems. In other work, subtypes of HMO's were studied as well – staff, group, independent practice associations (IPAs), and network forms (Christianson et al., 1991). Others have considered community or rural hospitals as well (Moscovice & Stensland, 2002).

Each of these organizational populations has their own distinct characteristics. For example, ESRDCs and HHAs are specialized providers, inclusive of surgicenters, urgent care services and hospices. “Alternative provider” organizations are called HMOs, Preferred Provider Organizations (PPOs), and group practices (Fennell & Alexander, 1993). Organizations are studied as collective actors, and often engage in efforts to change their environments.

Professional groups and associations are examples of organizations that are influential not only over individual organizations, but also the environments surrounding them (Greenwood

& Suddaby, 2006). The literature on professions is substantial. One segment of the literature focuses on professions and their own battles within the profession; another on the effects of professionals, while yet another literature considers the impact and influence of professionals on law-making bodies and other organizations (Zhou, 1993; Reay et al., 2006; Marquis & Lounsbury, 2007).

### ***Findings on Organizational Adaptation and Survival***

There a number of findings on how healthcare organizations respond to environmental change. For example, hospitals changed in response to environmental pressures by diversifying, offering new services such as outpatient surgery and geriatric care. Hospitals also vertically integrated, and might have performed better overall with this strategy, as this multi-level strategy feeds the hospital's core business (Fox, 1989).

As cost and performance pressure increased throughout the latter decades of the 20<sup>th</sup> century, three facets in management configurations within hospitals were observed: increased concentration from closure and mergers, increasing numbers of hospital corporate restructuring, change in management climate from nonprofit service to use of competitive business strategies (Fennell & Alexander, 1993). More recently, scholars have explicated how the use of a geographic clustering strategy also produces efficiencies in particular environments (Lu & Wedig, 2013).

Mergers and other forms of cooperation increased as a result of environmental pressures to compete. Mergers among community hospitals are more likely to be general community hospitals, and mergers are more likely to be specialty hospitals (Mullner & Andersen, 1987). Cooperation among hospitals increased greatly in the form of affiliations, consortia,

confederations, alliances, quasi-firms and networks (see p. 95 in Fennell & Alexander, 1993). This allowed for coordinated strategic action without the loss of autonomy. Although much literature through the 1990's focused on healthcare organization strategy formulation and implementation, it was largely prescriptive in nature, and not rigorous (Fennell & Alexander, 1993). Others have recently taken steps to address these deficiencies by evaluating environmental conditions in healthcare markets by using a resource dependence theory framework (Yeager et al., 2014). Yeager et al.'s (2014) review of such studies revealed twenty examples of empirical studies that were focused on performance and/or strategy outcomes among health care organizations.

### ***Professions and Professional Associations/Professions and Links to Organizations***

Professions within organizations such as hospitals are known to impact culture, decision-making processes and innovation (Freidson, 1975; Goodstein et al., 1996; Ferlie et al., 2005). Given that healthcare delivery systems as a whole have largely changed from an independent-practice model to managed care type approaches, professionals have become key to understanding how hospitals work. For example, Ferlie et al. (2005) found that innovations will not spread when physicians are opposed to their use. Physicians are more likely to accommodate their professional identities and loyalties than their organizations' identities (Goodstein et al., 1996). Simply put, adapting to change is stressful for organizational members (Dahl, 2011). Therefore, the key to understanding the behavior of healthcare organizations is understanding the behavior of professionals.

Starr (1982) undertook one of the most extensive works to date in understanding how the face of American healthcare changed in the 20<sup>th</sup> century. The premise was based around the idea

that physicians changed their status and power dramatically through direct and indirect actions. Physicians were previously a despised profession, and had to collectively change their image and perceptions in the eyes of the general population. As they attempted to do this, they simultaneously benefitted from unrelated trends relating to industrialization and overall migration to large cities. As a result of these changes, physicians began to have the luxury of being able to have their patient populations concentrated in more centralized areas. Subsequently, physicians became powerful and began to dictate how healthcare was delivered (i.e. they became gatekeepers).

Part of the process that physicians went through to obtain this power was distinguishing themselves and their jurisdictions from other professional groups of medical providers (Abbott, 1988). Some of the ways that they did this was by the use of white coats in hospitals, highlighting their educational superiority, or by pressuring lawmakers to grant them exclusive rights to practice (Starr, 1982; Halpern, 1992; Zhou, 1993; Reay et al., 2006; Manchikanti et al., 2012).

Professionals also affect organizations indirectly by influencing federal and state authorities relative to delivery and reimbursement. The state prescribes who can be employed, the extent to which organizations can compete, and structure separating the administration from medical staff (Fennell & Alexander, 1993). The state initiated Medicare and Medicaid legislation in the mid-1960's and prospective payment (PPS) in 1983, moving away from cost-based reimbursement. As a result, during the 1980's, which was a turbulent time in the healthcare field, three changes were prevalent: increasing diversity among organizational types and products, changes in ownership and managemens structures, new inter-organizational arrangements and multi-tiered governance structures. Two new types of organizations that were

introduced to the market during this time were ambulatory surgery centers and free-standing emergency centers.

A common theme in the professions literature is the prevalence of physician resistance to change. For example, the use of commercial management companies can produce physician resistance (Kahn, 1987). Goodstein, Gautam & Boeker (1994) focused on boards and strategic change; increasing professional diversity constrains organizational abilities to undertake strategic changes. Physicians oppose the expanded role of nurse anesthetists into pain management (Manchikanti et al., 2012), and increasing physician resistance decreases the likelihood of states passing laws favorable to nurse anesthetists (Feyereisen & Broschak, 2013).

### ***Other organizations in the field/Opportunities for future research***

Given the focus in healthcare as a field, it is interesting to note the dearth of research on professional training schools. There are few studies examining medical schools and their evolution (i.e. Dunn & Jones, 2010), but virtually none from an organizational perspective on alternative, or mid-level provider schools. Despite healthcare organizations being put under increasing pressure to reduce costs, compete with others, and alter their service offerings, scholars have not examined the source of one key component: the supply system of alternative medical practitioners.

Understanding more about professional training schools in healthcare is important for a number of reasons. First, American healthcare “resides at a nexus of science and clinical practice as well as the social and economic relationship between patient and practitioner” (Dunn & Jones, 2010: 115). Furthermore, professional education in the medical field is potentially informative due to its location at “the interstices of two institutional spheres—academia, which

comprises multiple professions, and healthcare, including professions and industry” (Dunn & Jones, 2010: 115). Exogenous forces and professional changes both affect educational institutions.

Second, healthcare education plays a critical gatekeeper function for respective professions. It is the point of entry for up and coming professionals as well as the supplier of personnel for healthcare organizations and professions. “Professional education is the key site for struggles that may reveal what causes change in the broader profession because it shapes the values, assumptions, and identities of the next generation” (Dunn & Jones, 2010: 116).

Third, the health care professions have changed substantially recently, and such changes can be seen as both a cause and a consequence of organizational changes such as the ones discussed here. Physicians are also both major resources as well as sources of control over hospitals; this fact places them in the technical as well as the institutional environments (Dunn & Jones, 2010). Therefore, understanding more about the jurisdictional battles physicians wage with neighboring professions is important.

Others have noted that physicians are no longer the only professional group of consequence to healthcare organizations (Fennell & Alexander, 1993). Yet they are largely understudied. One notable exception to the general dearth of research across all medical care schools is the work done by Dunn & Jones (2010). They investigate how logics vary according to a number of factors in the environment. For example, the number of women entering medical schools produced an increase in the presence of care logics in the medical field, and the number of public health schools (a competing jurisdiction) also affected care logics present in the field. Last, the number of medical schools resulted in increasing attention to science logics. Their study overall tried to get at the cause of varying levels of emphasis on care and science in the

provision of system-wide healthcare. In the same way, the supply of alternative providers affects the provision of healthcare system-wide.

Dunn & Jones (2010) note the need for research on jurisdictional boundaries between physicians and other mid-level providers. Their study of logics in medical schools and public health schools demonstrate the importance of understanding the histories of mid-level providers; in particular, those typically associated with care logics like nursing. Furthermore, “The ability of a profession to sustain its jurisdictions lies partly in the power and prestige of its academic knowledge” (Abbott, 1988: 53–54).

Understanding the dynamics of training schools is important for the ways that it enables understanding of organizational populations. For example, in addition to affecting medical training, women physicians are drawn to work-life balance, and show a preference for managed care organizations (Briscoe, 2007). Increasing numbers of medical schools and public health schools affect professional training and the medical field as a whole (Dunn & Jones, 2010). These results demonstrate the importance of understanding how populations of medical professional training schools affect healthcare organization populations more generally.

Dunn & Jones (2010: 126) go on to say: “The rise of alternative professions whose jurisdiction is closely related to the established profession may trigger competition among professions for control of specialized knowledge and its application because “professions make up an interacting system, an ecology” that is best understood in relation to other professions vying for dominance (Abbott, 1988: 33). Jurisdictional boundaries are perpetually in dispute. Each profession makes jurisdictional claims about who should define problems, which solutions are appropriate for these problems, and what constitutes appropriate knowledge and training. When a profession forecloses alternative models and shuts down rival claims, such as medicine

did for decades with alternative treatments (Scott et al., 2000; Galvin, 2002) and public health until the 1960s (Starr, 1982), its exposure to and threat from alternative models is lessened”.

Extending research on medical provider training organizations is important to understanding the field of healthcare more thoroughly. Although the extant literature on healthcare organizations sheds light on how hospitals respond to environmental changes, and how professionals contribute to both causing and responding to change, a greater understanding of how supplies of professionals are affected by environmental changes is needed.

The remainder of this paper will proceed as follows. First, I will describe more about my research setting, then develop and test hypotheses with regard to understanding the behavior of CRNA training schools in response to environmental change. Finally, I will discuss results, conclusions and implications for research and practice.

### ***CRNA Training Schools***

The establishment of jurisdictional claims over unique sets of professional knowledge and activities is created over time, and is solidified in three different arenas: the workplace, public and legal arenas (Abbott, 1988). Consistent with this framework, MDAs have attempted to control the domain of anesthesiology since the early part of the 20<sup>th</sup> century. One of the strategies utilized by MDAs during the 1940’s was to force nursing schools to refrain from training CRNAs, in contrast all other nursing specialties (Bankert, 1982; Halpern, 1992). Doctors utilized their powerful positions within the overall healthcare system and within institutions to enable this plan to work (i.e. Starr, 1982). Furthermore, MDAs capitalized on a rift that already existed between nurses and CRNAs (Bankert, 1982). Leaders within the field of general nursing tended to dislike the fact that CRNAs desired their own distinct status within

nursing associations in particular. As a result, when physicians pressed the issue of CRNA education, they were able to achieve their goal.

The large extent to which nursing schools refused to educate CRNAs resulted in a diverse set of arrangements for CRNA education. CRNA schools were developed over time in hospital settings, military settings, standalone schools, university settings outside of nursing schools, and occasionally in nursing schools. As recently as 1982, there were still only two CRNA schools located in the nursing schools at four-year universities (Bankert, 1982).

As the battle raged on in anesthesiology, CRNAs as a profession were forced to respond to the presence of negativity. The American Association of Nurse Anesthetists (AANA) decided in 1982 that they wanted all CRNA providers to eventually be master's trained (AANA, 1982). Up to that point, that had only been required to have a Bachelor's degree with a certificate in anesthesia. After subsequent clarification, CRNA schools had until 1998 to provide a master's degree, otherwise they would not be accredited by the national accrediting body (COA, Council on Accreditation, 2015).

The result of the displacement and variation in CRNA school locales was that there was substantial variation in their organizational characteristics. Not only was there variation in the training procedures within schools, there were varying levels of resources and capabilities available to each school. This fact was exacerbated by the increase in academic requirements issued by the AANA. Schools establishing themselves in different settings resulted in a plethora of choices being made available to each school when they faced a dramatic environmental change. Programs offering a certificate or a bachelor's degree had to make decisions about compliance. Given that schools had a 16-year window to comply, their options were to temporarily do nothing, close, move to a BS degree and then an MS, or move to an MS degree.

Nevertheless, a school only survived if it eventually made it to 1998 with a master's degree. Making a master's degree mandatory was not a guarantee of survival, but as I observed, it did increase the overall chances of survival. Here I make arguments about the characteristics that make schools more likely to adopt a master's degree program than those who do not.

## **Theory and Hypotheses**

### ***Theoretical Framework***

I examine my research question by using theoretical perspectives that explain the actions of organizations in response to various environmental changes, as well as those that explain organizational environments. Consistent with prior organizational research in healthcare, I develop arguments derived from two competing perspectives. First, I will briefly explain agency-centered theory including strategic choice; second, I will introduce environment-focused, or deterministic theory, specifically organizational ecology. Following these discussions, I will introduce managerial agency theory, which is an attempt to bridge these competing ideas.

Strategic choice theory is used to explicate a political process perspective, and is grounded in a continuous adaptive learning cycle (Child, 1997). Literature on managerial agency is often designed to identify the process by which power holders make decisions about strategic action. Strategic action could be taken with regard to the structure, environment or other areas/relationships internal and external to the organization. This works through pro-action and reaction. It is assumed to be a political and power based process (Child, 1997).

Deterministic theories such as organizational ecology generally consist of arguments that focus on organizational environments as an explanation for organizational outcomes. This stands in contrast to agency-type theories, which explain organizational outcomes as a function

of strategic individual actions. Ecological theory aims to explain why there are so many types of organizations, in addition to why they survive and fail (Hannan & Freeman, 1977; Ingram & Inman, 1996). Ecological theory argues that making timely organizational changes that align with the demands emanating from constantly changing and uncertain environments is difficult. Given that there are a finite amount of resources available, those organizations that gain the most legitimacy and fit attract those resources, allowing them to survive.

“Managerial discretion acts as a bridge between two previously conflicting organizational theories: population ecology and strategic choice (Hambrick & Finkelstein, 1987). Population ecology theorists argue that organizations are inertial and limited by internal and external pressures (Hannan & Freeman, 1977). Internal pressures include nontransferable personnel and investments in plant and equipment, while external pressures include legal and fiscal entry and exit barriers, constraints on available information, and a need for legitimacy within the organization’s domain. Conversely, strategic choice theorists argue that management’s chosen strategies shape organizational outcomes (Andrews, 1971)” (Wangrow et al., 2014: 101).

An important goal of the managerial discretion model is to reconcile these two opposing ideas and reflect the fact that forces act on organizations on a continuum. Depending on the situation and the extent to which forces exist, managers can be constrained or enabled in their latitude of action (Wangrow et al., 2014). The effects of individual actions or external environments on organization-level outcomes are affected by the extent to which managers possess discretion when accounting for constraining forces emanating from three sources: the environment, the organization and their own characteristics. For example, inertial forces and a need for incremental action can limit strategic choice (Mintzberg, 1978). In addition, CEOs with

an internal locus of control pursue more innovation and take greater risks (Miller, de Vries & Toulouse, 1982).

My goal with these theories is to learn more about what put some CRNA schools on a path toward failure, while others adopted necessary changes when faced with an environmental change. This question can be answered by exploring a number of organizational characteristics, as well as characteristics of their environment. In order to understand the dynamics within professional jurisdiction battles, I will also use theory from the sociology of the professions. After developing my hypotheses, I will explain the data and methodology for my study.

### ***Managerial Discretion***

Managerial discretion ideas are designed to build on strategic choice theory, as well as the upper echelons perspective (Hambrick & Finkelstein, 1987). Strategic choice theory holds that managers are central to the determination of goals and objectives, as well as implementing courses of action to pursue goals (Chandler, 1962). Organizational decision makers (the “dominant coalition”) are faced with strategic choices with regard to organizational change and the determination of where to compete (Child, 1972). Managerial discretion describes the extent to which those in the positions of authority within organizations have the latitude for taking actions, or have strategic choices, that affect organizational outcomes (Hambrick & Finkelstein, 1987). Building on the strategic choice literature, the managerial choice perspective acknowledges that there are three forces that contribute to determining a manager’s latitude of action: the task environment, internal organizational factors and individual managerial characteristics (Hambrick & Finkelstein, 1987; Wangrow et al., 2014).

### ***Managerial Characteristics***

Following the managerial discretion framework, managerial decisions at CRNA schools were influenced to a great extent by characteristics in all three categories. There were a number of arrangements for CRNA schools to organize under, and this resulted in the presence of many important variations in these categories. Given the nature of the type of decision schools were forced to make, and the nature of the political motives for MDAs, individual educational factors become an important determinant of organizational outcomes.

Individual managerial characteristics such as education levels are theorized to affect organization level outcomes and decisions (Kimberly & Evanisco, 1981; Hambrick & Mason, 1984; Bantel & Jackson, 1989); even *where* top managers attended school is particularly important during turbulent times (Gomulya & Boeker, 2014). In the case of CRNA schools, I argue that those schools employing program directors that have particular degrees are more likely to push for adopting a master's degree program for their school than others.

It is important to note that there existed a requirement during the time frame under study that schools have at least one program director that is either a CRNA or an MDA (typically schools employed two directors). As noted earlier, MDAs had a long history of opposing the production and use of CRNAs in the workforce (Manchikanti et al., 2012). As a whole, physicians have tended to accrue power increasing organizing skills throughout the 20<sup>th</sup> century (Starr, 1982). Given that they tend to identify with their profession as a whole more than with organizational or administrative goals, especially when identifying with an organization has the potential to threaten their professional status, it is reasonable to expect that the presence of an MDA in a director role at a CRNA school would decrease the likelihood that the CRNA school would adopt a master's program (Goodstein et al., 1996; Hekman et al., 2009).

The adoption of a master's degree indicates increasing commitment to the production of highly qualified CRNAs, and is in direct opposition to the goals of the MDA profession as a whole. Physicians have shown ability in many cases to resist unfavorable policy decisions, especially when in positions of authority (see Abbott, 1988; Goodstein et al., 1994). Powerful professionals and/or employees, in this case physicians, that stand to benefit from the arrangements already present in the status quo are likely to undertake necessary action to resist change. I expect this to be true particularly in the event that it involves maintaining a privileged position or when the actors experience deep philosophical opposition to the change (Abbott, 1988; Turco, 2012). Therefore, I hypothesize:

*H1: Employing an MDA as a program/assistant program director will decrease the likelihood of a CRNA school adopting a master's degree requirement.*

### ***Internal Organization***

Internal organization is another important factor in understanding organizational outcomes (Wangrow et al., 2014). Inertial forces, powerful internal stakeholders and resource availability influence internal organization. Such factors could include culture or other characteristics that contribute to the levels of discretion within an organization. Importantly, internal organization includes those powerful stakeholders that might resist and work against change. Organizations overall, due to inertia, change their core features more slowly than the environmental conditions in their domain change (Hannan & Freeman, 1984; Greve, 1999; Barnett & Pontikes, 2008).

CRNA school settings vary greatly in terms of their core features, cultures, resources and capabilities. For example, consider hospitals as a setting for educating CRNAs. Hospitals were the primary setting for CRNA schools prior to the prevalence of advanced degree requirements (COA, 2015). Hospitals vary to the extent that they involve teaching and formal education. Academic hospitals have substantially different cultures and goals than do non-academic hospitals, in addition to possessing different sets of resources and capabilities that contribute to varying outcomes (Barney, 1991; Rieselbach et al., 2013).

There is a great deal of importance placed on clinical training in the education of CRNAs. Therefore, it is important to understand in this context that access to slots for CRNAs to train in are important resources, and control of them is a potential source of power among organizations (i.e. Pfeffer & Salancik, 1978; Gulati & Sytch, 2007). Programs that were hospital based were at a distinct advantage from this perspective. However, physicians are largely in control of decisions made at the hospital level, and often use their power to limit the types and quantities of procedures undertaken by CRNAs (Halpern, 1992). Therefore, any decisions to make slots open to increasingly qualified CRNAs will be filtered and likely blocked by MDs. Highly qualified CRNAs, thereby possessing more visibility and projecting more capabilities, can be seen as threatening to the superior status enjoyed by physicians. For this reason, it is unlikely to expect that hospitals will engage in the pursuit of advanced degree programs for CRNAs.

Furthermore, although hospitals possess valuable resources in terms of clinical training sites, they also possess weaknesses with regard to the production of advanced degrees. Providing a certificate has a much lower emphasis on academic education than does the production of master's degrees. I argue that, for these two reasons, being hospital-based will result in lower likelihoods of programs adopting master's degrees.

*H2: Being based in hospital settings will decrease the likelihood of CRNA schools adopting master's programs when facing environmental change.*

In contrast to hospital-based schools, those based in military settings are largely devoid of the physician resistance experienced in non-military hospitals (personal interview). Military-based schools have developed to be more of a team-based culture, with each provider seen as adding value in an equal manner. The military setting for CRNA schools is also beneficial in terms of providing students access to high levels of sick patients and myriad training opportunities.

Furthermore, such programs are generally smaller in terms of enrollment (personal interviews – no cumulative enrollment data available from COA). This fact also makes it easier to accommodate increasing educational requirements for students (i.e. longer programs, more academic training). Therefore, I argue that it is likely that residing in a military setting will make it more likely that a program will adopt a master's degree.

*H3: Being based in military settings will increase the likelihood of CRNA schools adopting master's programs when facing environmental change.*

Although only two schools were located in nursing schools in 1982, there were more schools opened in nursing schools in subsequent years. Given that these schools were affiliated with four-year universities, their culture would be expected to be favorable toward adopting increasing degree requirements. Affiliations were already established with respect to attaining

clinical training, and building a master's degree program was likely to face no resistance from their physician counterparts that had varying levels of control in other settings.

*H4: Being based in nursing school settings will increase the likelihood of CRNA schools adopting master's programs when facing environmental change.*

Some CRNA schools were completely unaffiliated with an institution. I refer to them as standalone schools. Standalone schools are schools that relied on partnerships with hospitals and/or four-year universities to fulfill degree requirements. Such schools are likely to possess the academic capabilities to educate students, but have no built-in capability to provide clinical training. As a result, standalone schools should not be negatively affected by increasing academic requirements, as this is at the core of their capabilities.

*H5: Being based in standalone settings will increase the likelihood of CRNA schools adopting master's programs when facing environmental change.*

### ***Task Environment/Local Ecology***

Task environments also affect numerous organizational performance outcomes. Task environments are characterized by factors in organizational domains (i.e. industries) (Wangrow et al., 2014). Given that the population of CRNA schools was becoming more highly regulated and subjected to powerful external professions, organizations were more likely to be affected by the constraining forces of isomorphism. During this time of environmental turbulence impacting CRNA schools, characteristics in the task environment were important to understanding schools'

strategic choices. For example, the local ecology of organizations and available resources also were instrumental to understanding the extent to which CRNA schools could adapt to shifting environmental conditions (i.e. Hannan & Freeman, 1977; Carroll & Swaminathan, 2000; Hiatt et al., 2009).

Increasing numbers of organizations in a locale or field can increase the legitimacy of those organizations, but it also increases competition for the finite stock of resources (Carroll & Hannan, 1989; Wang et al., 2014). In the case of CRNA schools, increasing amounts of CRNA schools in state should impact the ability of schools to attain the additional resources necessary to expand to a master's degree program. Increasing degree requirements strains the available supply of clinical hours, graduate level instructors, and the related funding. I argue that increasing numbers of CRNA schools in a state will reduce the likelihood of adopting a master's degree for a focal school.

*H6: CRNA schools located in states with higher numbers of CRNA schools will have a decreased likelihood of adopting a master's degree program.*

Another ecological issue is relevant to this domain. In my informal interviews with current CRNAs, and in some cases those who are program directors, I discovered that there is resistance to CRNA school expansion within the CRNA profession as well. Increasing numbers of CRNAs means more competition for jobs for existing CRNAs. However, more CRNAs, especially in those states with relatively fewer MDAs, increase the power and the ability of CRNAs to influence policy makers in focal states (Feyereisen & Broschak, 2013). It is thereby

reasonable to expect that increasing numbers of CRNAs in a state will result in favorable environments for expansion, and increasing likelihoods of master's degree program adoptions.

*H7: CRNA schools located in states with higher numbers of CRNAs will have an increased likelihood of adopting a master's degree program.*

## **Data and Methods**

I performed this study by collecting and analyzing data on CRNA training schools from 1982-1998. The year 1982 is when the American Association of Nurse Anesthetists (AANA) first announced a plan to make it mandatory for CRNAs to have a master's degree. The AANA set 1998 as the deadline for schools to comply with this mandate. During this period, the number of accredited schools went from 144 to 84. There were a total of 87 school failures during the observation period, including those that both started and failed during the period.

My longitudinal data was collected from lists of accredited CRNA schools. Each year, the Council on Accreditation of Nurse Anesthesia Educational Programs /Schools (COA) issues a "List of Recognized Educational Programs". The lists include names of schools, affiliations, alliances, up to two program directors, their degrees/credentials, school location, dates of accreditation, degrees offered, program length and whether or not the program offers cash stipends. I coded my variables of interest for each school, each year that they were on the list. Copies of these lists were provided to me by the COA/AANA. I also collected data from the AANA with regard to the number of CRNA association members there were in each state during each year of the study.

I tested hypotheses that predict the antecedents to MS degree adoption. In my analysis, I analyzed the likelihood of a school adopting a master's degree between the years of 1982 and 1998. I used a logistic regression approach to analyze the data, given that my dependent variable is dichotomous and coded 0/1. Once a school adopted an MS degree program, I dropped them from the data set. My data set originally included a total of 1771 observations from 174 schools; after dropping the school-years that were post-MS adoption, I ended up with 839 school-years in the data set. I performed the analysis in STATA using the command 'xtlogit'. Following is a list of variables.

## **Variables**

### ***Dependent Variable***

*MS Degree Adoption.* This is a dichotomous variable that indicates whether or not a school meets the MS degree requirement. The variable is coded '0' in years that the school offered no MS degree, and '1' in years that they did offer an MS degree. As the original AANA mandate simply stated that schools must offer a master's degree, I treated both the 'MS-Only' and 'MS-Optional' designations in the school list the same.

### ***Independent Variables***

*MDA Program Director.* This variable is coded 0/1 for each organization year, and represents whether or not the school employed a Medical Doctor as program director or assistant program director. The school directory listed two program directors and their degrees for each organization-year.

*Hospital based.* This variable will be coded 0/1 as to whether a CRNA school is located at a hospital in the given organization-year.

*Military.* This variable will be coded 0/1 as to whether a CRNA school is located at a military setting in the given organization-year.

*Nursing School.* This variable will be coded 0/1 as to whether a CRNA school is located at a four-year university nursing school in the given organization-year.

*Standalone.* This variable will be coded 0/1 as to whether a CRNA school is located at a standalone setting in the given organization-year, i.e. no attachment to a university, hospital or military institution. This type of school could have an alliance and still be standalone.

*Schools/state natural log.* This variable is formed from a count variable that represents the number of schools in a given state. In order to normalize the distribution, I transformed the variable using the natural log function. This variable will be an indicator of the extent to which an environment is saturated with competition.

*CRNAs/state natural log.* This variable captures the presence of local CRNA state professional associations. The base variable is operationalized as the number of licensed CRNAs in each state during each year of the study; in order to normalize the distribution, I transformed the variable using the natural log function.

### ***Control Variables***

*Cash Stipend.* Cash stipend will be coded 0/1 and represents whether or not a CRNA school offered students a stipend for attending their school that year. This variable is designed to control for financial explanations in regard to school behavior. Those schools that are offering cash stipends could either have difficulty attracting students, or could be in a strong financial position. Therefore, this variable controls for financial drivers of school behavior.

*Program Length.* This variable controls for the length of the academic anesthesia program at the school. This variable is a discrete variable coded as the number of months required to attain a degree from a school. It controls for the extent to which a program is viewed as more or less rigorous.

*Post 1982 start.* This variable controls for CRNA school start dates. Those schools that started after the MS degree announcement in 1982 could have a higher likelihood of MS degree adoption based on their prior knowledge of that requirement. Those schools that were started after 1982 were coded 1, and all others 0.

*Male Program Director.* I controlled for program director gender, as gender can influence a number of organization-level decisions and outcomes (Sallee, 2013). This variable is coded 0/1 and is indicative of the gender of the program director for a given school-year. It is coded '1' for years in which the program director was a male and '0' in those years when it was a female.

## **Results**

### **Analysis**

My quantitative analysis included evaluating the means and standard deviations of all variables, in addition to providing bi-variate correlations. I then inserted progressions of variables into my logit models, and evaluated the explanatory power of various models. My goal was to test my hypotheses by examining the significance of variables included in the respective models. I am limited in the current study by the lack of control variables for organizational size and age. This information was requested, but the AANA indicated that it did not have such systematic data available for this time period. In order to supplement my quantitative analysis, I also compiled some fine-grained decision data on schools during my observation period.

### **Descriptive Results**

Given that there were 16 years to observe the actions of schools facing the loss of accreditation, I was interested in examining the different ways in which schools approached this decision. As of 1982, when my data collection started, there were four different degree options for CRNA programs: Anesthesia Certificate /BS optional, BS only, MS optional and MS only. I treated having either the 'MS optional' or 'MS only' degree designation as satisfying the MS requirement for accreditation. These are the individual actions that occurred among schools following the AANA accreditation announcement:

1. Do nothing
2. Move from a certificate program/optional BS to BS Only
3. Move from cert. to MS optional
4. Move from BS only to MS optional
5. Move from MS optional to MS only

6. Close
7. BS Only to MS only
8. Cert. to MS only
9. MS only to MS optional
10. MS optional to certificate
11. Revocation of Accreditation
12. BS Only to Cert.
13. MS optional to BS only

I identified 25 different paths that schools took following the 1982 mandate issued by the AANA. Figure 1 lists the detailed paths and the number of times each happened.

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Insert Figure 1 here  
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The most prevalent courses of action followed by schools were the following: do nothing and close (65), do nothing/go from a certificate to an MS only (29), do nothing (23), do nothing/MS opt/MS only (11). The other paths occurred 8 or less times.

Of the schools that did nothing, many opened already at master's degree status. Others that closed were certificate programs that made no movement toward compliance. Future research could pursue more understanding regarding school closure in response to this environmental change. The fact that some schools went "backwards" and offered lesser degrees is also curious and requires further investigation.

## Regression Results

As for my quantitative analysis, I was interested in determining which factors explained whether or not schools adopted the MS degree (either MS optional or MS only). Table 1 presents the bi-variate correlations, as well as standard deviations and means. Table 2 presents the results of the logistic regression models. Model 1 includes control variables; three of the four variables are significant at the ( $p > .001$ ) level. Model 2 adds managerial characteristics variables. According to Model 2, the likelihood of a CRNA school adopting a master's degree program decreases significantly when the program director is a Medical Doctor ( $p > .05$ ). The coefficient for 'MDA program director' is negative and significant. Although this would normally indicate support for Hypothesis 1, subsequent models cast doubt on this assertion (see later discussion regarding Model 4.)

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Insert Tables 1 and 2 here  
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Model 3 in Table 2 presents the likelihood of master's degree adoptions by adding internal organization variables. These variables are indicative of the setting that a CRNA school is in. First, the variable 'hosp-based' has a negative and significant coefficient ( $p > .001$ ). Hypothesis 2 is therefore supported. Being located in a hospital decreases the likelihood that a school will adopt a master's degree program significantly ( $p > .001$ ). However, being located in a military setting increases the likelihood of master's degree adoption. The coefficient for 'military based' is positive and significant ( $p > .01$ ). Likewise, the coefficient for 'nursing

school' is positive and significant ( $p > .05$ ). Therefore, Hypotheses 3 and 4 are supported. Last among internal organization variables is 'standalone'. The coefficient for standalone schools is negative, which is not in the expected direction, but not significant. Hypothesis 5 is not supported.

Model 4 adds the variables for task environment. The coefficient for '# schools/state natural log' is negative and significant ( $p > .001$ ), providing support for Hypothesis 6. Likewise, Hypothesis 7 was supported as the coefficient for '# CRNAs/state nat log' is positive and significant ( $p > .01$ ). Model 4 also provides a caveat with respect to Hypothesis 1. With the addition of subsequent variables, the coefficient for 'MDA program director' does not remain significant. Therefore I performed a likelihood ratio test comparing Model 2 and Model 4 ('lrtest' in Stata). The results indicate that 'mda program dir' is not jointly significant ( $p > .7398$ ), thereby indicating that the support for Hypothesis 1 is not sustained.

## **Discussion**

Although I discuss some the implications of my research here, I devote Chapter 5 to a much broader discussion. It is apparent that the production and use of mid-level providers in the healthcare industry is a complex issue. Given the desire of those in the administration of healthcare benefits to utilize mid-level providers as a bridge to serving more people, it is interesting to see that the training process has been a difficult road. Since physicians have become the gatekeepers to American healthcare (Starr, 1982), they have fought hard against relinquishing any control over their domain. In spite of this fact, CRNAs are one example of a mid-level provider that has collectively attempted to raise its standing as a profession; they have done this by increasing academic preparation and utilizing creative resources and capabilities to

refine their production process. This process provides a window into understanding more about organizations, policy and healthcare administration generally.

Although the upper echelons and managerial discretion perspectives receive a fair amount of attention in the management literature, it has remained to be seen to what extent these theories hold in medical education settings. Furthermore, there is an interesting debate with respect to how much agency plays a role in comparison to the environment in this turbulent setting. The findings from this study contribute to this current and extensive debate.

In this study, it is apparent that the position an organization finds itself in within an industry affects the likelihood that it can marshal the necessary resources to survive. Furthermore, it demonstrates that finding suitable leadership also matters.

### **Validity and Limitations**

This study has the potential to be generalizable to the extent that other school populations have variability in their settings and requirements. Other mid-level providers are likely to have unconventional background stories and to be set in a heterogeneous set of institutions. To the extent that this is true, this study could have increasing external validity.

A potential limitation to the validity of this study is the extent to which MDA program directors were representative of their profession and had control over schools' individual decisions. For example, it is possible that there could be self-selection bias and particular physicians self-select into roles with CRNA schools. To the extent that this is the case, randomly selected physicians may or may not act accordingly in other settings.

**Figure 1**

<b>Path</b>	<b>Quantity</b>
1-6	65
1-8	29
1	23
1-3-5	11
1-7	8
1-8-6	7
1-5	6
6	5
5-6	3
5	2
1-4-5	1
12-11	1
1-12	1
7	1
1-13-6	1
1-3-6	1
1-4-7	1
4-6	1
1-3-10-6	1
2-6	1
1-2-7	1
2-7	1
5-9-5	1
1-8-9-5-6	1
9-1-5	1
Total Schools	174

**Table 1: Descriptive Statistics and Bivariate Correlations**

Variable	N	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Master's Adoption	839	0.13	0.34											
2. Cash Stipend	839	0.49	0.50	0.24										
3. Program Length	839	24.29	1.28	0.34	0.11									
4. Post-82 start	839	0.07	0.25	0.29	0.18	0.14								
5. Male Prog. Director	839	0.44	0.50	0.02	0.15	0.09	0.01							
6. MDA Prog. Director	839	0.91	0.28	0.15	0.12	0.06	0.10	0.03						
7. Hosp-based	839	0.86	0.35	0.22	0.14	0.04	0.28	0.07	0.26					
8. Military based	839	0.07	0.26	0.16	0.11	0.01	0.07	0.03	0.28	0.06				
9. Univ. Nursing School	839	0.02	0.15	0.26	0.06	0.12	0.21	0.06	0.20	0.21	0.01			
10. Standalone	839	0.01	0.08	0.09	0.05	0.01	0.20	0.01	0.03	0.21	0.02	0.01		
11. Schools/state nat. log	839	1.53	0.87	0.07	0.30	0.00	0.01	0.15	0.10	0.12	0.04	0.01	0.07	
12. CRNAs/state nat log	839	6.50	0.90	0.01	0.07	0.06	0.05	0.04	0.03	0.08	0.02	0.03	0.04	0.73

**Table 2: Logistic Regression Models of CRNA School Master's Degree Adoption Likelihood**

Independent Variable	Model 1 Controls		Model 2 Mgr. Charac.		Model 3 Internal Org.		Model 4 Task Environ.	
Cash Stipend	-3.78	***	-3.84	***	-3.50	***	-3.55	***
	(0.76)		(0.78)		(0.81)		(0.83)	
Program Length	1.53	***	1.57	***	1.58	***	1.72	***
	(0.30)		(0.31)		(0.32)		(0.32)	
Post 1982 start	4.15	**	4.16	**	2.75	*	2.77	*
	(1.31)		(1.33)		(1.31)		(1.40)	
Male Prog Dir	-0.18		-0.21		-0.20		-0.59	
	(0.54)		(0.56)		(0.54)		(0.63)	
MDA Prog Dir			-1.78	*	0.10		0.33	
			(0.80)		(0.86)		(0.95)	
Hosp-based					-3.54	***	-4.03	***
					(1.07)		(1.15)	
Military based					4.22	**	4.98	**
					(1.41)		(1.58)	
Nursing school					4.43	*	5.57	*
					(0.23)		(2.31)	
Standalone					-1.08		-1.12	
					(2.70)		-3.07	
# schools/state nat log							-1.78	**
							(0.72)	
# CRNAs/state nat log							2.24	**
							(0.80)	
Constant	-38.55	***	-37.83	***	-37.54	***	-52.82	***
	-7.32		-7.35		-7.44		-10.04	
Chi Square	34.86		35.70		31.31		40.12	
Prob>Chi Square	0.00		0.00		0.00		0.00	
d.f.	4		5		9		11	

Values are unstandardized regression coefficients. Standard errors are shown in parentheses. There were 839 school-years observed.

# p <.10; \* p <.05; \*\* p <.01\*\*\*p<.001; significance levels are two-tailed for control variables and hypothesized effect.

## **CHAPTER FOUR**

### **CAN YOU HELP ME?**

#### **THE USE OF RESOURCE BASED STRATEGIC ALLIANCES FOR SURVIVAL IN RESPONSE TO REGULATORY CHANGE**

##### **Abstract**

In this paper, I test new predictors of alliance formation within a vulnerable organizational population using ideas from the resource-based view and organizational ecology. In addition, I re-test previous findings about alliance formation drivers that have the potential to differ under conditions presented here. I find that examining the positions of resources with changing values allows me to predict alliance formation activity with a population of medical provider schools. Implications are discussed for higher education, organization theory, healthcare administration and the sociology of the professions.

## **Introduction**

Higher education organizations are one example of organizations being exposed to increasing environmental turbulence. State budget cuts, increasing tuition, declining enrollments, increasing student debt loads, competition from online schools and the growing cost of awarding financial aid are all contributing to the instability and vulnerability of higher education institutions (Reid, 2015).

*Vulnerability* in terms of strategic position infers that organizations are subjected to instability and reduced likelihoods of sustainability and/or survival, and are in need of resources (Eisenhardt & Schoonhoven, 1996). These conditions are often caused by environmental conditions and changes in those conditions. Generally speaking, there are a number of reasons that organizations experience vulnerable strategic positions. For example, organizations in this position could be ones that are subjected to large numbers of competitors. In addition, those firms who are in emergent markets or those who are attempting to implement a pioneering technology strategy are considered vulnerable (Eisenhardt & Schoonhoven, 1996).

Previous research has identified a number of ways that firms deal with their vulnerability, in addition to ramifications of facing vulnerability. Managers conduct searches for solutions until a satisfactory standard has been met (Cyert & March, 1963). Structural inertia theory argues that it is difficult for firms to adapt to rapidly changing environmental conditions. As a result, organizational changes cannot occur at a fast enough pace, and thereby increases their likelihood of failure (Kelly & Amburgey, 1991). However, others argue that a common way for organizations to address vulnerable strategic positions is to form strategic alliances (Eisenhardt & Schoonhoven, 1996). Good matches among alliance partners can reduce organizational failure rates in competitive markets (Mitsubishi & Greve, 2009).

Although there are many strategies that organizations pursue in order to adapt to such conditions, one course of action that is particularly under-researched within higher education organizations is strategic alliance formation. In particular, pursuing strategic alliances is a relatively prevalent and important avenue for any organizations that are in vulnerable strategic positions (Eisenhardt & Schoonhoven, 1996). I aim to contribute to the strategic alliance formation literature in this paper by examining alliance formation behavior in a population of higher education organizations. Higher education organizations are highly regulated and institutionalized, and thereby provide an opportunity to understand the differences in such a field as compared to organizations that compete in more loosely regulated markets.

### **Strategic Alliance Formation**

Strategic alliances are “voluntary cooperative inter-firm agreements aimed at achieving competitive advantage for the partners” (Das & Teng, 2000). As the need for rapid change has increased in many industries, there has been a proliferation of strategic alliances. “Scholars have often considered (forming) strategic alliances to be an alternative to internalization on the one hand and market exchanges on the other. That is, for a given factor (product or service), a firm may choose to: (1) produce it on its own; (2) purchase it from the spot markets; or (3) make it jointly with partner firms.” Alliances are preferred “when the critical inputs required to pursue the opportunity are owned by different parties and when these inputs are inseparable from the other assets of the owner firms.” (Ramanathan et al., 1997: 65) “Collaborations are a useful vehicle for enhancing knowledge in critical areas of functioning where the requisite level of knowledge is lacking and cannot be developed within an acceptable timeframe or cost” (Madhok, 1997: 43).

Scholars have examined strategic alliances from a number of theoretical perspectives. The theoretical lenses through which strategic alliances have been studied include “transaction cost economics (Hennart, 1988; Williamson, 1985), game theory (Parkhe, 1993), the strategic behavior model (Hagedoorn, 1993; Porter, 1985), the strategic decision-making model (Das & Teng, 1996a,b, 1997a, 1998a,b, 1999b,c; Tyler & Steensma, 1995, 1998), social exchange theory (Axelrod, 1984; Blau, 1964), power-dependence theory (Chisholm, 1989; Pfeffer & Salancik, 1978; Schmidt & Kochan, 1977; Van de Ven & Walker, 1984)” (Das & Teng, 2000: 34) and matching theory (Mitsuhashi & Greve, 2009). The most prevalent theory used has been transaction cost economics. Despite the amount of attention focused on alliances, only a small amount of literature has considered them from a resource-based perspective. Das & Teng (2000) made an effort to advance a resource-based theory of strategic alliances, and the goal of this research is to advance this theoretical paradigm even further.

### ***Resource-based view and strategic alliances***

Resources are “those (tangible and intangible) assets which are tied semi-permanently to the firm” (Wernerfelt, 1984). In Das and Teng’s (2000) resource-based approach to strategic alliances, they provided a rationale for entering into strategic alliances from a resource perspective as opposed to a transaction cost (TCE) or other perspective. TCE has often been an explanation advanced for why organizations choose partners. For example, when a firm decides that it will be more cost effective to bring an upstream production process in house or attain better control, they might want to form an alliance.

“The resource-based view assumes that firms are bundles of resources (e.g. Penrose, 1959; Wernerfelt, 1984; Peteraf, 1993). Examples of such resources are technical know-how,

management skills, capital, and reputation. The resource-based view can be extended to alliances by arguing that resources provide both the needs and the opportunities for alliance formation. That is, alliances form when firms are in vulnerable strategic positions for which they need additional resources that alliances can provide to compete effectively, or when firms are in strong social positions such that they have the resources necessary to know, attract, and engage partners” (Eisenhardt & Schoonhoven, 1996: 138). Eisenhardt & Schoonhoven (1996) were the first to relate both strategic and social factors to alliance formation.

Alliances have long been a conduit for attaining necessary resources. Alliances have become an efficient way for organizations to obtain resources when compared with other methods such as acquisitions or mergers. Alliances offer more flexibility than other methods. Alliances allow organizations to focus on the resources that they will find useful, and not be required to absorb other resources that are not useful (Das & Teng, 2000).

Social resource explanations for partnering include opportunities presented by various aspects of top management teams (TMT). For example, firms who have TMTs that are larger, ones with greater numbers of previous employers, or those who held higher levels of positions previously have greater rates of alliance formation (Eisenhardt & Schoonhoven, 1996).

Alliance formations have been examined in many industries, and are a popular way to adapt to shifting global markets. Some of the industries where alliances have been examined are in biotechnology and shipping (Mitsubishi & Greve, 2009). Less prominent among alliance studies are those including organizations in the public or non-profit sector (Arya & Lin, 2007). Several drivers are known to exist for alliance formation. Strategic and social reasons are predominantly the drivers of alliances. Those who share complementary markets or compatible resources (Mitsubishi & Greve, 2009) are more likely to partner with each other. As noted

earlier, firms are more likely to undertake this behavior when existing in vulnerable strategic positions than those who are not.

An underexplored area of strategic alliance formation is that of how contingent resource values affect alliance activity. RBV scholars have noted that the extent to which capabilities or resources can bestow sustainable competitive advantage on organizations depends on the environment (Barney, 2001). However, the ramifications of this fact are not well known (Arora & Nandkumar, 2012).

Although scholars understand that alliances are more likely pursued by those organizations that are vulnerable, it is not understood how an entire *population* of organizations will respond when they are vulnerable and face explicit survival risk from regulatory change and environmental uncertainty. I aim to fill this gap by extending the resource-based approach to strategic alliances. Mitsuhashi & Greve (2009) also pointed out the importance of examining resource-related partner selections in different contexts, and the importance of examining situations where organizations were faced with strategic options, not simply allying or not. My research question is: why are some vulnerable organizations more likely to form strategic alliances than others, following environmental/regulatory change?

By examining this question, I hope to extend existing research in the following ways. First, research shows that firms forming strategic alliances can be less likely to fail (Mitsuhashi & Greve, 2009), however it has not been studied to the extent that firms ally when becoming vulnerable as a result of regulatory change. Ecological theory would have us believe the environment selects particular organizational forms that fit, but it is not known the extent to which an environmental shift affects alliance activity.

Environments are filled with a finite amount of resources, and firms vie to control those

resources; as environments shift, organizations compete with different groups for those resources (Hannan & Freeman, 1977; Carroll & Swaminathan, 2000; Arora & Nandkumar, 2012).

Although we know that increasing numbers of competitors or other factors making firms vulnerable increase alliance activity, we do not fully understand the effects of the environment favoring particular resources or capabilities (Barney, 2001; Arora & Nandkumar, 2012). In particular, the literature has not examined additional characteristics of vulnerability. For example, among vulnerable organizational populations, do previous findings hold? Or are there additional factors that account for alliance activity?

I will examine the characteristics of a vulnerable organizational population. In contrast to Eisenhardt & Schoonhoven (1996), who identified vulnerable organizations within a broader population, I will examine an entire population that was made to be vulnerable. I aim to extend the resource-based theory of strategic alliances (Das & Teng, 2000) in this paper. Inherent in this approach is an effort to understand what drives the formation of strategic alliances.

Resource based approaches to understanding alliances are still necessary and short in supply (Das & Teng, 2000; Mitsuhashi & Greve, 2009). Central to this approach is the identification of complementarity and compatibility of resources. Although some have considered a matching approach to market complementarity and resource compatibility, there is a gap with regard to resource complementarity. Compatibility differs in the sense that it reflects like-kind resources as opposed to non-redundant resources.

I am attempting to contribute to the resource-based theory of strategic alliances by investigating some unanswered questions in the literature. Not all vulnerable organizations ally, so what determines why some do and others do not? Second, I will test Das and Teng's proposition regarding resources with imperfect mobility. Third, I will test the generalizability of

the claim relating alliance behavior and survival.

In addition to those vulnerable positions identified in previous work, such as being new markets, competing with many organizations or employing a pioneering technology, other reasons exist for firms being vulnerable. For example, an important oversight to this line of research exists when firms are faced with environmental/regulatory change that explicitly threatens their survival. Another contribution is identifying that they face decisions about what their strategic options might be. One of these options is to engage in strategic alliances to obtain resources necessary for continued operation, as opposed to developing them internally or closing the organization.

The remainder of the paper is as follows. First, I will explain the theoretical framework for my study. Then I will illustrate an example of how the schools within a medical profession changed radically following an environmental shift that resulted in a regulatory change for an entire professional field. Accordingly, I will develop arguments and test hypotheses regarding the factors that explained alliance formation among this organizational population. Last, I will provide results and discuss the implications of my research.

## **Theory and Hypotheses**

### ***Theoretical Framework***

In order to understand more about resource-based alliance formation, I have chosen to study a population of medical provider training schools using ideas from the resource-based view (RBV). RBV is concerned with explaining how organizations build and sustain competitive advantages utilizing resources that are controlled by organizations. A number of scholars have developed a resource-based theory of strategic alliances (Eisenhardt & Schoonhoven, 1996; Das

& Teng, 2000; Mitsuhashi & Greve, 2009), and I follow in this line of research by proposing refinements to the characteristics of organizations entering into strategic alliances. Specifically, I will utilize the two-part framework developed by Eisenhardt & Schoonhoven (1996); my arguments will be broken down into predictors associated with strategic position and social position. The organizational population under study consists of schools that train Certified Registered Nurse Anesthetists (CRNAs).

### ***Research Setting: CRNA Schools***

Two professional groups practice anesthesia independently in the United States – nurse anesthetists (CRNAs) and anesthesiologists (MDAs). Although each of the professions is trained relatively equally in the specifics of delivering anesthesia, there are different educational paths prior to attaining certification. CRNAs possess a nursing background and critical care experience prior to entering anesthesia school, while MDAs are not required to have professional experience prior to entering medical school. MDAs are trained broadly with regard to medicine and CRNAs are focused on the specialty of anesthesia. Prior to 1982, CRNA schools were required to provide only a certificate in anesthesia, and CRNAs were required to have a BS degree to practice.

Following a long period of debate over provider qualifications, and in particular an announcement made by the AANA (American Association of Nurse Anesthetists) in 1982, CRNAs were expected to attain an MS degree by 1998. This announcement created a great deal of turmoil in the general population of CRNA schools. These schools were small and located within a wide variety of institutions with varying access to educational resources. Subsequently, many schools closed their doors, while others were able to adapt to the increasing professional

requirements demanded by the AANA. Many of the schools that survived did so by pooling resources through the process of strategic alliance formation.

### ***CRNA School Resources***

CRNA schools are positioned in many different settings. Hospital, university nursing school and non-nursing school, military, and standalone programs possess heterogeneous resource configurations for which to support CRNA schools. Resource characteristics provide explanations as to which programs survived and which strategic decisions they enacted following the regulatory change. Although many resources are involved in supporting a program, those such as academic staff, administrative staff, cash, property for offices and classrooms are secondary in importance to other critical resources. The primary resources that are critical to the function of a school are academic training, including access to an accredited degree, and access to slots for clinical training. Resources such as property, cash and administrative staff need not be CRNA school specific, and therefore are much more plentiful in the environment.

Clinical training was emphasized as a primary resource for many years, as evidenced by the plethora of small hospital-based programs that dominated CRNA production: 119 out of 144 programs were hospital based in 1982 (Council on Accreditation, 1982). In subsequent years, academic training came to the forefront of the field as MDAs pressured stakeholders to consider CRNA credentials in making decisions about the trustworthiness and legality of CRNAs performing independent anesthesia work. As this environmental change became evident, the American Association of Nurse Anesthetists (AANA) decided that the next stage for CRNAs would involve them increasing their credentials to a master's degree.

The issuance of a master's degree did not necessarily change all of the classroom

requirements for CRNA, as there are particular classes needed for CRNAs to pass professional licensing exams, or boards, when they finish. CRNAs had been practicing anesthesia long before this degree upgrade. The focus had been largely on clinical training and the practice of patient care. However, one main difference in the production of master's prepared CRNAs was the undertaking of a thesis. The thesis required research training and the pursuit of data collection well beyond that of a bachelor's training. Through this process, CRNAs became more marketable in terms of their specialist preparation.

When schools became aware of the shifting requirements in 1982, the composition of the CRNA school population began to change radically. Many schools closed, and in particular many schools that were based in hospitals (72 during my observation period). The construction and changes in the field revealed that there was a shift in the value of particular resources – the value of some had increased and the value of others had decreased. Where those resources were located – at the core or on the periphery of the organization – seemed to influence how organizations responded to the environmental change.

Being at the core or on the periphery of an organization refers to the centrality, or lack thereof, of a particular function or resource relative to the overall organizational mission and activities. Here is a chart of schools and where the two primary CRNA school resources/capabilities are located within their overall institution:

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Insert Figure 1 here  
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By examining an institution's mission statement and their broader goals, one can begin to ascertain where particular resources are located.

In contrast to current RBV theory, which captures the static nature of resource values, I am highlighting the fact that resource values change according to external events. This type of change in turn can drive alliance behavior. Two things contribute to this phenomenon – subjective determination of value, and location of the resources.

### ***Changing Resource Values and CRNA Schools***

Environmental/regulatory change has the potential to change the relative value of resources; some become more valuable and some less valuable, and as a result organizations extract varying degrees of value from them (Barney, 2001; Arora & Nandkumar, 2012). These changes also cause organizations to become weaker or stronger, depending on what the environment demands (Hannan & Freeman, 1977; Barnett & McKendrick, 2004). I argue that the value of these resources affects alliance behavior, and is tied to the social position that organizations find themselves in, along with their original resource endowment (i.e. Eisenhardt & Schoonhoven, 1996).

For example, in the case of professional schools, there are multiple components needed to confer accredited degrees on students. In the case of CRNA schools, access to clinical training and academic training are two primary resources needed for the schools to exist. Obviously students are a third category, but they are contingent upon the successful procurement of the first two. In the case of CRNA schools, as pressure increased to expand the training of nurse anesthetists, academic credentials became more highly valued in the field as a whole. As a result, schools were forced to respond to this growing demand, as well as regulatory change

initiated by the CRNA professional association (American Association of Nurse Anesthetists or AANA).

The level of resources and capabilities possessed by programs dispensing academic credentials was in many cases not adequate for the expanded requirements put into place after the new regulatory mandate. In order to pursue compliance, programs started adding additional months to the program, and offered a master's thesis as well. This required a new set of capabilities related to research that needed developing.

The competitive position that each school was in was reflective of the CRNA programs' importance, relative to the institution to which it was attached. For example, military CRNA schools were a small, peripheral component of the overall operation. Hospitals (those with no connection to medical schools or the military) were involved in healthcare delivery, and some level of academic training, but it was not central to their mission. University-based programs, however, had academic training at the core of its mission.

Following this line of reasoning, those schools housed at institutions with academic training at the center of their mission would be better suited to handle the environmental shift and resulting change in resource values. Just to identify one problematic hurdle to attaining master's level certification, new degrees at public institutions require state-level approvals. It can be a difficult, tedious and time-consuming process.

### ***The relationship between resources and environmental change***

My research question involves understanding alliance behavior of firms made vulnerable as a result of environmental change. Previous research has identified predictors of change according to where features are located. Where features/resources are located has an effect on

the ability of an organization to adapt to environmental change. According to structural inertia theory, changes should be harder at the core than at the periphery of an organization (Hannan & Freeman, 1984; Greve, 1999). However, not all empirical evidence corroborates this theory (Kelly & Amburgey, 1991; Dobrev et al., 2003; Le Mens et al., 2015).

When environments undertake discontinuous change, I argue that there is an increased probability of alliance formation relative to the location of newly favored resources; when a newly favored resource is present within organizations, but is located at the periphery of the organization, it should have different effects than when it is located at the core. Structural inertia theory holds that core changes within firms are not able to generally happen fast enough to keep up with the environment (Hannan & Freeman, 1984; Le Mens et al., 2015). However, when examining this idea from the perspective of the resource view, it changes. Firms looking to adapt to change are looking to maximize the value of their resources or obtain resources from others (Arora & Nandkumar, 2012). When key resources are at the core of their capabilities (i.e. core competence), firms are likely to be less motivated to seek to ally with others than if the key resource is located at the periphery (Das & Teng, 2000; Prahalad & Hamel, 2006).

Additionally, consider when core resources are immobile or non-substitutable (Das & Teng, 2000). Although a firm might be characterized by resources that are immobile, the immobile resources might be located in an area of the organization that are not central to their competitive advantage. Furthermore, it is difficult without disentangling a firm's resources to declare them immobile. By evaluating specific resources and where they are relative to the firm's structure, it is possible to test resource-based hypotheses. In order to frame my strategic position logic, I will summarize Das & Teng's (2000) original arguments with respect to the immobility and substitutability of resources. Das & Teng's (2000) original proposition regarding

alliance formation was as follows: The more a firm's resources are characterized by imperfect mobility, imperfect imitability, and imperfect substitutability, the more likely the firm will get involved in strategic alliances.

### ***Strategic position hypotheses***

The first strategic position I will examine is that of resource control. The resource-based view makes the suggestion that valuable resources controlled by firms are typically scarce, imperfectly imitable, and do not have direct substitutes (Barney, 1991; Peteraf, 1993). As a result, trading and accumulating resources becomes strategically necessary. When resources can be exchanged efficiently in the market, however, organizations will be more likely to continue alone and rely primarily on the market (Eisenhardt & Schoonhoven, 1996). However, although market transactions are the default mode, efficient exchanges are often not possible on the spot market. Certain resources are not perfectly tradable, as they are either mingled with other resources or embedded in organizations (Chi, 1994). Hence, mergers, acquisitions, and strategic alliances are variously employed. The resource-based view considers strategic alliances and mergers/ acquisitions as strategies used to access other firms' resources, for the purpose of garnering otherwise unavailable competitive advantages and values to the firm.

Others explored a resource-based view of alliances under different names, including the property rights perspective (Ramanathan et al., 1997) and the organizational capability perspective (Madhok, 1997). However, the overarching rationale for strategic alliance formation appears to be fairly straightforward. Forming alliances allows for the aggregation, sharing, or exchanging of valuable resources with others in the event that resources cannot be easily obtained through the process of market exchanges or mergers/ acquisitions (M&As). The goal is

primarily to create the highest possible value out of existing resources through combining them with others' resources. This should, of course, result in optimal returns. Organizations generally pursue strategic alliances for two primary reasons: to make attempts at obtaining others' resources or to strive to retain and develop their internal resources by combining them with the resources of others (Das & Teng, 2000).

An example of obtaining others' resources could be in the area of new product development. Strategic alliances could be used to pool technological know-how and expertise possessed by different firms (Leonard-Barton, 1992; Teece, 1992). In contrast to the motive of reaching others' resources, the motive of retaining resources consists of keeping one's own valuable resources inside the organization. Kogut (1988) suggested that some organizations might want to maintain particular resources but cannot capitalize on them. For example, if there is an excess of research personnel, and not enough meaningful work at hand, firms could out-source instead of laying them off. This could be done by going after projects that have the potential to be carried out by utilizing the resources of other firms, such as financial and/or physical resources. As a result, strategic alliances might help an organization to retain such resources that are under-utilized internally.

Previous research suggests that antecedents to alliance formation include internationalization (Yoshino & Rangan, 1995), technological needs (Hagedoorn, 1993; Tyler & Steensma, 1995), perceived environmental uncertainty (Dickson & Weaver, 1997), and various other strategic motives (Glaister & Buckley, 1996). In the RBV of alliances, organizational firm resources indicate the likelihood of organizations entering into strategic alliances; the possession of critical resources is typically a prerequisite for alliance formation (Das & Teng, 2000). Apparently, some firms are less self-reliant than others, and tend to actively seek out partners for

strategic alliances. These differences can be accounted for by organizational resource characteristics.

The resource-based view argues that firm resource heterogeneity tends to be sustained over time, and is not a short-term phenomenon (Peteraf, 1993). There are resource characteristics that prevent organizations from advancing toward resource homogeneity. These are imperfect mobility, imperfect imitability, and imperfect substitutability (Dierickx & Cool, 1989; Barney, 1991; Peteraf, 1993; Chi, 1994).

Imperfect mobility is concerned with the difficulty, in addition to nontrivial costs, of the movement of particular resources between organizations. Dierickx and Cool (1989) pointed out that factor markets are known to be incomplete and imperfect; as a result, numerous resources are not tradable or are not perfectly tradable. For example, those resources such as reputation and organizational culture are just not tradable at all. Other resources, such as tacit knowledge within firms, lose a substantial amount of their value if they are moved from existing organizational contexts.

In comparison to imperfect mobility's concern with barriers preventing the attainment of resources from their owners, imperfect imitability and imperfect substitutability describe the barriers to attaining possession of similar resources from elsewhere (Barney, 1991; Peteraf, 1993). Lippman and Rumelt (1982) even introduced a concept known as causal ambiguity, which is a lack of transparency about which resources generally create competitive advantage. Causal ambiguity is important because it obscures connections between resources and competitive advantage, thereby constraining the ability of firms to imitate competitors and/or to employ substitutes.

The imperfect mobility, imitability, and substitutability of firm resources sustain resource

heterogeneity, and are essential for strategic alliance formation. Firms whose resources are perfectly or easily mobile, imitable, and substitutable are not in strong competitive positions. Other firms are in position to bid desirable resources away from such firms in factor markets. Therefore, there is little or no motivation to form strategic alliances. If all or many of the desirable resources are available for acquisition in factor markets at fair prices, it makes no sense for firms to form strategic alliances, as they typically result in high governance costs (Osborn & Baughn, 1990) and sacrifices in organizational control (Lyles & Reger, 1993). Hence, it is clear that a premise for this argument is that resources not being perfectly mobile, imitable, and substitutable can be attained through alliance formation. Referring back to the example of reputation, although it is not tradable, it is possible that it could be transferred as a result of strategic alliance formation.

It is argued that only when an organization is not able to easily get necessary resources from elsewhere—except by a form of sharing agreement with the owners—will it be likely to pursue strategic alliance formation. For example, since there is typically a well-developed, mobile and substitutable capital market for establishing businesses, those firms that only possess financial resources to share will provide no particular advantage and are likely not to be approached for strategic alliances. Nonetheless, when particular projects look to be too risky and capital markets fail to provide necessary capital, financial resources that are available from provider firms are likely to become imperfectly mobile and imperfectly substitutable. Then those in need of capital will pursue those firms.

In summary, the more that a firm's resources are imperfect in their mobility, imitability, and substitutability, it is more likely that other firms will be interested in pursuing alliance formation with it. An example lies in the pharmaceutical industry, as small biotech firms are

prone to ally with big pharmaceutical companies for R&D activities. The major driver is not simply to gain access to the financial resources, which are rather mobile. The key point is that, beyond the financial resources, big pharmaceutical firms also provide other intangible resources such as marketing and/or operations knowledge. These resources are much less mobile, imitable, and substitutable (Das & Teng, 2000).

Whereas Das & Teng (2000) made arguments about a focal firm becoming an alliance target as a result of their immobile resources, I argue that firms will form alliances because of the *location* of the favored resources in their own organization. Once a certain capability or resource becomes more scarce, the firm with valuable, immobile resources will be more likely to acquire other resources to ensure maximum value creation from their immobile resources. So, it is not just because of others' pursuit of focal firms' resources that alliances increase, it is because of a shifting environment along with the desire to preserve the resources that they have in other areas.

Although Das and Teng proposed that firms with resources that are immobile will be more likely to get involved in strategic alliances, I argue here that understanding antecedents to alliance formation can be more complex than that. Where resources are located within a firm also matters.

### ***Hospital Based CRNA Schools***

Consistent with these resource arguments, and given the presence of valuable but immobile resources (i.e. clinical training) possessed by hospital based CRNA schools, as well as their desire to preserve and utilize those resources, I hypothesize that it is likely that these programs will be increasingly likely to form strategic alliances. Furthermore, as noted in Table 1, the location of academic training (the environmentally-favored resource) within hospital-based

programs is at the periphery; it is not central to their overall healthcare mission, and an organizational mission is a key determinant when distinguishing what is a core versus peripheral characteristic (Ruef, 1998). Mission statements of hospitals overwhelmingly emphasize healthcare services as core to their mission.

*H1a: Hospital-based CRNA programs will be associated with a positive likelihood of alliance formation because of the immobile resources that they possess, and the position of favored resources (academic training).*

### ***Military Based CRNA Schools***

Military based schools had the advantage of exposure to a wide variety of clinical experience given their veteran patient population. However, they were limited in their ability to adapt to the academic requirements demanded by the regulatory change. According to [www.defense.gov](http://www.defense.gov), military institutions in the United States are charged with the mission of providing “the military forces needed to deter war and to protect the security of our country”. Although training is prevalent in military institutions, these new academic demands that were specific to healthcare highlighted necessary resources that were therefore peripheral to programs based in military institutions; thus I hypothesize that being based in a military setting increases the likelihood of alliance formation.

*H1b: Military schools will be associated with a positive likelihood of alliance formation because of the position of their favored resources (academics).*

### ***Standalone CRNA Schools***

There were two key parts to the new academic requirements issued in 1982. First was the ability to undertake research and master's thesis projects. Second was the issue of accreditation. Possessing an accredited degree was not always the same as just "getting the actual academic work done". Although standalone CRNA schools had the ability to adapt to the research requirements given that academics were central to their organizational mission, they did not always possess the necessary accreditation capabilities associated with issuing a master's degree. Therefore, it is likely that standalone schools would undertake alliances in order to meet the new environmental/regulatory demands.

*H1c: Standalone schools will be associated with a positive likelihood of alliance formation because of the need for accredited degrees (not necessarily the actual classroom portion of the academic training).*

### ***University Based CRNA Programs***

Although university-based programs had the benefit of being located in institutions that had academic training at the core of their mission, just as standalone schools, they differ in an important characteristic. University-based programs had an advantage when the environment shifted and the relative value of academics training increased. In addition, universities were already accredited, so they were not motivated by the pursuit of program accreditation. Therefore, programs housed in universities should benefit from the centrality of academics to their core competence. Given the increased costs of alliance governance, and the reduced need for cooperation in this area, university-based programs should be less likely to form alliances.

*H1d: University-based programs will be associated with a negative likelihood of alliance formation because of the central position academic training holds with their institution (i.e. accessibility to the scarce/more valuable resource).*

Each of the CRNA schools made strategic choices to position themselves within the industry according to their access to resources. Where they positioned themselves influenced the likelihood that they would succeed when the environment shifted and certain resources became scarcer.

### ***Competition Among Organizations***

Competition is important to understanding strategic positioning. When firms face high levels of competitors, their strategic position becomes vulnerable. Resources are limited, profits are limited and firm survival can be threatened (Klepper & Graddy, 1990; Shan, 1990; Wang & Shaver, 2014). It can be difficult to differentiate when there are many similar organizations and products. Those organizations in markets with fewer competitors reap bigger profits (Porter, 1980; Klepper & Graddy, 1990) and experience higher likelihoods of survival (Carroll & Hannan, 1989).

An important way that firms improve their strategic position is by forming strategic alliances. Forming strategic alliances allow an organization to obtain resources from partners, and enables them access to cost and risk sharing. This type of arrangement can ensure even and predictable resources flows (Baum & Oliver, 1991; Miner et al., 1990).

Alliances can enhance legitimation as well, improving an organization's strategic position.

Such cooperation can produce visibility and provide signals enhancing status to internal and external stakeholders (Baum & Oliver, 1991; Weiwel & Hunter, 1985). In crowded markets, alliance formation can help distinguish an organization from competitors.

Alliances have the potential to improve market power as well. Depending on who the partner is, it has the potential to increase buying power or increase power due to horizontal or vertical integration. Such relationships can also facilitate knowledge-based resource sharing (i.e. customer information, manufacturing) (Hamel & Prahalad, 1990; Shan, 1990; Teece, 1987). If competitors ally with each other, competitive markets provide increasing numbers of potential partners.

*H2: The greater the number of competitors, the greater the rate of alliance formation.*

### ***Social position hypothesis***

In addition to strategic position, strategic alliance formation is also contingent upon social position (Eisenhardt & Schoonhoven, 1996). For example, members of top management teams possessing strong social position affect the opportunities for alliance formation through industry connections, reputation and status. As top managers are typically the drivers of strategy and the sources of potential partners, their social position is important to understanding alliance behavior. Social relationships are powerful (i.e. Granovetter, 1992; Heimer, 1992; Ruef et al., 2003) and provide the strong social resources for which alliance opportunities might come to fruition.

The social position of top managers is important particularly to vulnerable firms. When environments are turbulent or changing, managers can be critical conduits through which

organizations can stabilize. For example, their industry ties provide opportunities to initiate alliances, as well as to develop trust among potential partners. Developing trust with alliance partners, as well as possessing negotiating skills, is critical, as these social resources can make or break an alliance deal (Larson, 1992). Furthermore, the presence of quality managers can indicate organizational quality and/or status (i.e. Mitsuhashi & Greve, 2009), making the organization more desirable as an alliance partner.

In particular, managers (in this case program directors) with advanced degrees signal organizational quality and status. This is the case notably when the environment has shifted toward, and an increasing value of, education and professionalization. Not only do advanced degrees among program director signal quality and status, it also means that they have larger networks of contacts and longer industry tenure. Developing these personal relationships increases trust among potential alliance partners, which along with their knowledge lays important groundwork for inter-organizational cooperation (Galaskiewicz & Wasserman, 1989) and alliance formation (Larson, 1992).

*H3: The greater the number of advanced degrees among program directors, the greater the rate of alliance formation.*

## **Data and Methods**

I performed this study by collecting and analyzing data on CRNA schools, and in particular their alliances from 1982-1998. In 1982, the AANA (American Association of Nurse Anesthetists) first announced a plan to make it mandatory for CRNAs to have a master's degree. 1998 was the deadline given for schools to comply with this mandate. During this period, the number of accredited schools went from 144 to 84. There were a total of 87 school failures

during the observation period, including those that both started and failed during the period. There were alliances documented in 678 of a possible 1771 organization-years in the data set.

My panel data was collected from lists of accredited CRNA schools. Each year, the Council on Accreditation of Nurse Anesthesia Educational Programs /Schools (COA) issues a “List of Recognized Educational Programs”. The lists include names of schools, affiliations, alliances, up to two program directors, their degrees/credentials, school location, dates of accreditation, degrees offered, program length and whether or not the program offers cash stipends. Copies of these lists were provided to me by the COA/AANA.

I was interested in understanding antecedents to alliance formation for a school in a given year, and used event history modeling. I treated an alliance as a unique event each year, as each year a school was at risk for forming an alliance. Many of the schools changed alliance agreements on a year-to-year basis; therefore I coded each alliance that I observed as 0 or 1 in the year that the data were published. I used logistic regression to analyze the data, given that my dependent variable is dichotomous and coded 0 or 1. My data is longitudinal, so I performed the analysis in STATA using the command ‘xtlogit’. The following is a list of variables.

## **Variables**

### ***Dependent Variable***

*Alliance.* This is a dichotomous variable that indicates a CRNA school engaging in an alliance that organization-year. This variable will be coded as a 0/1 for each organization-year. A ‘1’ represents a school listing another organization as a part of the school title and/or location. Examples of alliances in the data set would include the following listing:

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Insert Figure 2 here  
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### ***Independent Variables***

*Hospital.* This variable will be coded 0/1 as to whether a CRNA school is located at a hospital in the given organization-year.

*University.* This variable will be coded 0/1 as to whether a CRNA school is located at a four-year university in the given organization-year.

*Military.* This variable will be coded 0/1 as to whether a CRNA school is located at a military setting in the given organization-year.

*Standalone.* This variable will be coded 0/1 as to whether a CRNA school is located at a standalone setting in the given organization-year, i.e. no attachment to a university, hospital or military institution. This type of school could have an alliance and still be standalone.

*State\_Schools.* This is a count variable that represents the number of schools in a given state. This variable will be an indicator of the extent to which an environment is saturated with competition.

*Number of Program Director Advanced Degrees.* This variable is the sum of two dichotomous variables coded 0/1. The first is an indicator representing whether or not the Program Director has an advanced degree. This is the first person listed in the directory, as there are typically two people listed. The second variable is a variable indicating whether or not there is an MD assistant program director employed by the school. Higher numbers of degrees are hypothesized to indicate higher levels of social resources possessed by a school (maximum is two.)

### ***Control Variables***

*Cash Stipend.* Cash stipend is coded 0/1 and represents whether or not a CRNA school offered students a stipend for attending their school that year. This variable is designed to control for financial explanations in regard to school behavior. Those schools that are offering cash stipends could either having difficulty attracting students, or could be in a strong financial position. Therefore, this variable controls for financial drivers of school behavior.

*Program Length.* This variable controls for the length of the academic anesthesia program at the school. This variable is a discrete variable coded as the number of months required to attain a degree from a school. It controls for the extent to which a program is viewed as more or less rigorous.

*Post 1982 start.* This variable controls for CRNA school start dates. Those schools that started after the MS degree announcement in 1982 could have different behavior based on their prior knowledge of that requirement. Those schools that were started after 1982 were coded 1, and all others 0.

*College of Medicine.* This variable is coded 0/1, and is an indicator of whether or not a school is affiliated with a college of medicine. Schools located within colleges of medicines are likely to have systematically different attributes and access to resources than those that are not.

## **Results**

### ***Regression Results***

Table 1 shows the summary statistics and bivariate correlations. Table 2 shows the results of my panel logit models. Model 1 includes the control variables, which were included to control for various program resources and attributes. The control variable coefficients, including cash stipends (representing financial resources), program length, being affiliated with a college of medicine and a post 1982 school start were all significant.

Model 2 adds the variables associated with strategic position. Hypotheses 1a, 1b, 1c and 1d were all supported, and three of the four at the ( $p > .001$ ) level. Only H1c, regarding standalone schools, was supported at the ( $p > .05$ ) level. My arguments stated that the positioning of favored resources within the school, whether at the core or at the periphery, influenced the likelihood of a school forming an alliance with another organization. This turned out to be a positive effect in hospital, military and standalone schools, while being in a university setting made alliance formation less likely. The coefficient for competitive environments,

represented by the number of schools in a state (natural log), was positive and only marginally significant.

Model 3 adds the variable for social position. The social position of a school was measured by the amount of advanced degrees possessed by program directors. Increasing levels of advanced degrees were hypothesized to increase the likelihood of alliance formation in a school. The coefficient was positive and highly significant, providing strong support for H3. Additionally, the variable for competitive environments (indicated by the number of schools in a state) was not significant in the model, contrasting previous research. Model 3 was also the best fitting model.

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Insert Tables 1 and 2 here  
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### **Limitations**

I was limited in the current study by the lack of control variables for organizational size and age. This information was requested, but the AANA indicated that it did not have such systematic data available for the time period under study.

### **Discussion**

As noted in Chapter three, I discuss some the implications of my research here, but I devote Chapter 5 to a much broader discussion. The research here shows that resource position

and environmentally contingent resource values are important to understanding strategic alliance formation behavior. Additionally, I contribute to RBV theoretical development by illustrating the difference between static and dynamic resource valuation. While others have explicated the importance of resources in understanding alliance formation, my research expands on this notion by illustrating differences in alliance behavior within a vulnerable population.

In my results, I found that a previously theorized predictor of alliance formation was not significant. Being in a highly competitive environment did not result in increased alliance activity, contrary to other known environments (Eisenhardt & Schoonhoven, 1996). This answers one of my proposed questions: within vulnerable populations, there are different predictors of alliance activity in comparison within general organizational populations.

Alternately, previous findings on the effects of social resources were confirmed in this study. Higher levels of social resources increased the likelihoods of alliance activity.

I also extended the resource-based view of strategic alliances by illustrating how organizations have different adaptive tendencies relative to where valuable resources are located. Those organizations with valuable resources located on the periphery are more likely to ally than those who possess newly valuable resources at their core. CRNA schools provided an interesting empirical example within which to examine the effects of variable resource endowments. As the population of CRNA schools landed in different settings due to the competitive professional environment in the field of anesthesiology, their location relative to the institutions' core was important in determining future adaptive capabilities.

This research is informative for a broad audience that extends beyond scholars of organization theory. Not only is the idea of strategic alliance formation largely absent from the higher education literature, this research has implications for healthcare administration and

management scholars as well. Being aware of the relative values and location of resources is instrumental in predicting who among an organizational population might be candidates to undertake alliance activity, and ultimately who will survive.

<b>School Setting</b>	<b>Core</b>	<b>Periphery</b>
Hospital	Care/Clinicals	Academics
Military	Defense	Academics/Clinicals
Univ/Nursing	Academic	Clinicals
Standalone	Academic	Clinicals

**Figure 1: Resource Locations by Setting**

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**Figure 2: Sample Alliance Data**

**Table 1: Descriptive Statistics and Bivariate Correlations**

Variable	N	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Alliance	1771	0.38	0.49	-									
2. Cash Stipend	1771	0.28	0.45	0.12	-								
3. Program Length	1771	25.47	2.27	0.14	-0.28	-							
4. College of Med.	1771	0.43	0.20	0.01	-0.00	0.11	-						
5. Post 1982 Start	1771	0.12	0.33	0.03	-0.15	0.15	0.14	-					
6. Military based	1771	0.11	0.31	0.28	-0.08	0.03	-0.06	0.06	-				
7. Hospital Based	1771	0.73	0.44	0.23	0.16	-0.10	-0.19	0.28	0.06	-			
8. Standalone	1771	0.02	0.15	0.13	-0.06	0.03	-0.03	0.20	-0.05	0.26	-		
9. Univ. based	1771	0.34	0.47	0.27	-0.09	0.12	0.15	0.07	-0.18	0.51	0.11	-	
10. Schools/state nat log	1771	1.41	0.81	0.03	0.25	-0.11	0.05	0.01	-0.12	0.06	0.06	0.10	-
11. Number of PD Advanced Degrees	1771	1.65	0.51	0.17	-0.08	0.06	0.02	0.00	-0.14	0.12	0.06	0.11	0.01

**Table 2: Logistic Regression Models of CRNA School Alliance Formation Likelihood**

Independent Variable	Model 1 Controls		Model 2 Strategic Position		Model 3 Social Position	
Cash stipend	-1.98	***	-1.92	***	-1.86	***
	(0.27)		(0.29)		(0.29)	
Program length	0.20	***	0.20	***	0.19	***
	(0.30)		(0.05)		(0.06)	
College of Medicine	4.05	*	5.37	***	5.14	**
	(2.06)		(1.61)		(1.63)	
Post 1982 start	-2.21	**	-0.49		-0.56	
	(0.22)		(0.79)		(0.83)	
Hosp-based			4.37	***	4.13	***
			(0.91)		(0.92)	
Military based			6.72	***	7.02	***
			(1.39)		(1.34)	
Standalone			6.17	*	6.06	*
			(3.02)		(2.94)	
Univ-based			-3.01	***	-2.87	***
			(0.66)		(0.65)	
Schools/state nat log			-0.67	#	-0.45	
			(0.39)		(0.39)	
Number of Program Director Adv Degrees					1.46	***
					(0.28)	
Constant	-7.55	***	-9.76	***	-12.08	***
	(1.44)		(1.78)		1.87	
Chi Square	106.51		155.56		163.55	
Prob>Chi Square	0.00		0.00		0.00	
d.f.	4		9		10	

Values are unstandardized regression coefficients. Standard errors are shown in parentheses. There were 1771 school-years observed.

# p <.10; \* p <.05; \*\* p <.01\*\*\*p<.001; significance levels are two-tailed for control variables and hypothesized effect.

## CHAPTER FIVE: CONCLUSION

### *Summary of Findings: Chapter Two*

Chapter Two examined drivers of public policy formation in domains where multiple professions overlap and compete for the right to practice. Given the lack of previous studies in this area, combined with the volatile nature of competitive interaction, the results of this study are important for the understanding of jurisdictional boundary formation. I discovered that previous theory in this area needs to be amended. Previous research suggesting that powerful supportive professions influence policy makers to their benefit has limitations. Under conditions where a profession has a clear and explicit challenge to their jurisdictional claims, a blanket assumption of dominance does not fully precede success. In the case of CRNAs, they (represented by members of their professional association) were not able to command uniform success with policy makers with a policy that seemed potentially economically beneficial to state constituents and policy makers alike. Other factors were needed to explain policy innovation adoption even when CRNAs were most powerful.

An important construct that emerged from this research is relative power. In the case presented here, CRNAs had to be relatively powerful when compared with MDAs to be effective from a policy innovation perspective. Not factoring in MDA power in states resulted in the non-significance of CRNA power. Only when CRNAs held a relative power advantage did states adopt pro-CRNA policies. A second factor that was significant to the explanation of state policy innovation adoption was labor market constraints. Those states that had more constrained labor markets, as measured by numbers of rural hospitals, were more likely to adopt pro-CRNA policies. Such states are more prone to a lack of professionals and specialists.

Last, an important finding from Chapter Two, although not altogether unexpected, was that more powerful MDA associations prevented states from adopting pro-CRNA laws. An important question that is raised from this finding centers on the effects of physician power. The nature of the policy examined here was such that no changes were mandated by its adoption. Adopting this pro-CRNA policy simply allowed medical facilities in the state to have the *option* of using unsupervised CRNAs. Adopting this policy provided potential benefits and flexibility to constituents yet was blocked where physicians are most powerful. Research on anesthesia patient outcomes has yielded no differences when comparing CRNA vs. MDA cases, so I wonder if this restrictive behavior, and thereby the use of physician power, is in the best interest of all parties? This is one potential topic for future research.

### ***Summary of Findings: Chapter Three***

Chapter Three took a step back and examined a “supply chain” of anesthesia providers: CRNA schools. A natural follow-on question from Chapter Two was to identify how CRNAs became relatively powerful. Why do different states have different concentrations of CRNAs, allowing them more or less practice autonomy? This line of questioning led me to research how the CRNA profession evolved.

CRNAs have practiced longer than MDAs, dating back to the Civil War; yet have faced many uphill battles in their quest for the right to practice and attain more autonomy. A key source of restriction to CRNA development has been MDA resistance. MDAs have taken active roles in attempting to destroy the CRNA profession (Halpern, 1992). Among their tactics was to strong-arm nursing schools into not training CRNAs. This tactic resulted in a proliferation of CRNA schools operating outside of traditional academia settings.

Utilizing managerial discretion theory, I made arguments regarding the different sources of explanations that existed in understanding the characteristics of schools and environments that adopted increasing degree requirements. I broke down the explanations into three categories that are consistent with this theory: managerial characteristics, internal organization and task environment. Given existing power theory and the history between MDAs and CRNAs, I expected that the presence of MDAs in a managerial capacity within CRNA schools would reduce the likelihood of schools attaining master's degree status. This turned out to be strongly supported.

Regarding internal organization, I hypothesized that the setting a school was embedded in would affect its likelihood that it would adopt master's degree requirements. Each type of school, whether based in military, university or hospital settings, had distinct cultures and resources, providing variability in their likelihoods of issuing master's degrees. Adapting to the increasing standards set forth by the AANA was more difficult for hospital-based programs, but was attainable for those schools based in military and university settings. I attributed a large part of the variation in these outcomes to the internal power structures of these institutions.

Physicians play a much more prominent role in hospital-based programs than they do in military programs. This fact contributes to the level of influence that physicians possess relative to clinical training slots needed by CRNA schools. Physicians will be less likely to allow CRNA programs to become more prestigious and notable by increasing their degree status when they have more control. In military or university settings, physicians do not always have the same level of authority afforded them, as they are different cultures.

Last, the task environment also influenced master's degree adoptions. Schools in states with larger numbers of programs were less likely to adopt master's requirements, while states

with larger numbers of CRNAs were more likely to adopt. These facts highlight some of the effects that task environments/local ecologies have on organization-level outcomes.

#### ***Summary of Findings: Chapter Four***

Although there were a number of strategic choices that existed for CRNA schools following the regulatory change under study here, I found that forming strategic alliances became an important mechanism for schools to access complementary resources and to maximize the value of their own valuable resources. Being set in other institutions besides four-year colleges led to a large amount of variation in the resource configurations possessed by CRNA schools. Utilizing the resource based view (RBV), I made arguments and tested hypotheses surrounding the notion that organizational resources are predictors of alliance activity for organizations that are in vulnerable strategic positions. Although a small amount of previous work has touched on this idea, I tested some key ideas of related theory and expanded the theory by examining the position of organizational resources. More specifically, I argued that the location of key resources, whether in the core or on the periphery of the organization, would predict likelihoods of alliance formation.

I found that the location of key resources and competences matters when examining alliance activity. When a regulatory shift occurs changing the relative values of resources, particular types of organizations are more likely to be involved in alliance formation. Those schools that were housed in organizations where the environmentally favored resource was located in their core were less likely to ally with others. Alternately, those organizations where the favored resource was located on the periphery were more likely to ally. Although previous

theory focused on the difficulty of organizational change at the core, my theory illustrates that change is possible when it is properly aligned with changing resource values.

In Chapter Four, I also tested hypotheses related to social resources and competitive position. I found that higher levels of social resources in the form of more advanced degrees among program directors, predicted higher levels of alliance formation. Additionally, facing more competitors in an environment increased the likelihoods of alliance formation. These findings confirmed previous results; however, previous results were taken from populations including all levels of vulnerability instead of the entire population being vulnerable.

### **Overall Contribution**

Taken together, the chapters in this dissertation improve our understanding of field formation and change within a professional domain defined by challenging and existing professional groups. It is quite different when a field evolves in a relative vacuum versus in the context of an existing powerful incumbent group. The ramifications extend beyond the central field actors, in this case anesthesiology professionals (and their associations), to state policy makers, market participants such as hospitals and their stakeholders, training schools and the institutions that house them.

Physicians fought long and hard to secure their position and status in healthcare (as well as in society more generally), and do not accept change easily. Of particular interest to me is understanding the ramifications of this entrenchment, as well as understanding the conditions under which the established order does change. Examining these questions has also led me to another, broader question regarding physicians and the field of healthcare. Are physicians too powerful?

Physicians hold a central and prominent place in the field of healthcare, particularly in the United States where this research has been conducted. Since physicians became the gatekeepers of healthcare, there have been few conditions under which their authority and power have been successfully challenged. Typically those instances have involved cost pressures and/or organizational structures providing others such as administrators more control (e.g. HMOs). Here I illustrate conditions under which their authority has held and where it has diminished.

At the state level, where professional associations and medical boards influence policy makers, physicians are still influential. The exception is that where states are more constrained in labor market resources, physicians can lose their grip on maintaining restrictive policies. Additionally, when competing professions are more numerous relative to the incumbent profession, not just in an absolute sense, changes can be achieved. In spite of these changes, physicians remain disproportionately powerful among those in the broader healthcare field.

As I detailed in Chapters Three and Four, physician anesthesiologists have influenced CRNA school evolution as well. In an attempt to control and limit CRNA training and production, MDAs leveraged their status within university nursing schools, blocking CRNA training in nursing schools. This set off a chain of events within CRNA schools, leaving them vulnerable to future events in the broader CRNA field. From the results in Chapter Three, we can see that physicians still controlled CRNA production in many cases through the 1980s and 1990s. When the CRNA professional association dictated increased degree requirements in the field, MDAs still acted as a roadblock in schools' pursuit of master's level certification. Acting in their roles as program directors, MDAs led to significant reductions in the likelihood of schools adopting master's degree programs.

Other important factors in determining whether schools could adapt to master's degree requirements included being established in particular types of institutions. The internal organization, including the culture and power structure of institutions housing CRNA programs, explained significant amounts of variation in MS degree adoptions as well. For example, physicians' being in control of clinical training slots was one factor that made it less likely for hospital-based programs to adapt to MS requirements and survive. Furthermore, the weakening of physician control in military programs actually did the reverse – it made MS program adoption more likely.

In following this line of reasoning, I identified that the types and positions of resources possessed by CRNA schools, and the institutions that housed them, drove alliance activity. We learned from the behavior of CRNA schools, made to be vulnerable by increasing academic requirements, about implementing adaptation strategies. Among the most prominent strategies was to form strategic alliances with organizations possessing key resources made to be increasingly rare and valuable through regulatory shifts in the environment.

In the case presented here, I have attempted to focus on major changes within an established field. This focus provides insight into the tactics of a dominant incumbent profession, as well as the adaptation techniques of challengers. This research can provide understanding not only to scholars of organization theory and the professions, but those interested in healthcare, public policy and higher education as well.

### **Changes that need to be made**

Possible changes that can be made in the future center on proper framing. Chapter Two has been rejected once for insufficient new theoretical contributions, so I will need to narrow the

focus of the paper on an appropriate topic. I will be focused on more of the contextual issues, and submit it to a healthcare management journal (possibly Sociology of Health and Illness).

Chapter Three also needs to be framed in an appropriate manner. The literature review will need to have a tighter focus than it does currently. The outlet I am targeting is a healthcare journal, as the focus is on mid-level professionals in healthcare. Specifically, a journal focusing on medical education might be appropriate (i.e. Academic Medicine, etc.). I will have to frame the paper accordingly as I make this choice.

Chapter Four will be focused on a management or organizations journal such as Organization Science, Journal of Management or Strategic Management Journal. I will need to refine my contribution as well as my constructs. It is not clear at this point that I have good internal validity. I will need to examine how I can make the arguments closer to the measures I have, and/or come up with measures that are more representative of my constructs. I think that the central premise of the paper, resource-based motivation for alliance formation, has promise and there is an audience that is interested in this area.

### **Future vision for my research program**

The vision for my future research program includes following the course set out by my dissertation. Given that I have an opportunity to be located in a specialized Healthcare Management program, I will be in position to carry on with my problem-centered, field level research in healthcare. This carries along with it the potential to make important theoretical and practical contributions to a large and growing field. Others working in this area, such as Scott et al (2000) and Starr (1982) have made profound impacts by undertaking field level work related to healthcare professionals and organizations; given the different levels that my case plays out in,

I hope to follow their lead in a small way. The emerging line of research on strategic action fields (Fligstein & McAdam, 2011) could also be an appropriate avenue through which to channel this work.

I have already begun to examine the field of anesthesia and its overlapping jurisdictions at a number of levels. State and federal governments play a role, professional associations play a role, training schools play a role, as well as many other institutional actors. One area of this field that I have not examined is the actual use of CRNAs versus MDAs at the hospital/facility level. I suspect that there are different patterns of usage relative to the restrictiveness of a state and the local environment. I am interested in examining the effects of the policy decisions contemplated in my current work.

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