

**ARMY OFFICERS' CHOICES TO CONTINUE SERVING IN AN ARMY  
RESERVE COMPONENT: A Q-METHODOLOGY STUDY**

by

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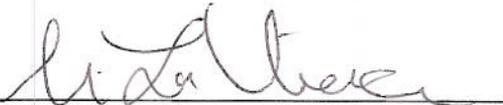
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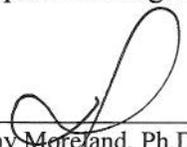
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## **Abstract**

Responding to the recent shift in the U.S. national military strategy from symmetrical to asymmetrical warfare, the U.S. Army transformed the role of the U.S. Army reserve components (comprised of the Reserve and the National Guard) from a strategic force to an operational force. Middle-grade officers form the basis for the U.S. Army's middle management and represent a significant investment of national resources in their training and development. The study findings provide a better understanding of the factors that influence U.S. Army middle-grade officers to remain serving as members of the U.S. Army's reserve components. The study involved Q-methodology and a focus on factors influencing Army reserve component middle-grade officers to continue serving in an Army reserve component. The use of Q-methodology was appropriate for the study. As a true mixed-methods approach, Q-methodology combines the subjectivity of qualitative studies and the validity of quantitative research. Participants in the study ranked 36 statements in the Q-sample to capture viewpoint clusters that identify factors influencing the decision to continue serving in the U.S. Army. Analysis of the findings showed that internal motivation was a continuing thread through the themes of patriotism, teamwork, and the Army culture.

## Dedication

To the men and women who serve faithfully in our Army Reserve and National Guard who keep our country the home of the brave and the land of the free.

To my father, for whom I had hoped to complete this work while he was still alive.

## Acknowledgments

This project would have never been completed if it were not for the support of so many people. First, thanks to my wife Beverley for never complaining about my having to log into a class session regardless of where we might be or what she would rather be doing. Then to my son Kevon for his patience in working with me to develop the website I used to collect my data. To Dr. Michelle LaVicka, my committee chair, for her patience in guiding me through this process. To Dr. James Wood, and Dr. Julie Hamlin, my committee members, for working with me through the delays in my program. Thanks to Toni Williams, my APA editor for her outstanding work. Thank you to all my Army friends who endured my constant reminders during the data collection process. To Major General Robert Kasulke, Major General Paul Mock, Colonel Pedro Colon, Colonel Judi Davenport, Colonel Christine O'Donnell, Lieutenant Colonel Cheryl Becker, Lieutenant Colonel Janet Every, Lieutenant Colonel Robert Karbel, Lieutenant Colonel Tom Lasser, Major Melissa Espina, Major Linda Hall, Major Joe Snel, and Captain Lidia Gatchalian. Thank you to my study participants for taking the time out of your busy schedule to complete my survey. Finally, for all my other friends and classmates who provided the words of encouragement along the way to keep me focused on my goal. The journey has been worth the effort.

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## Chapter 1: Introduction

The potential impact of the loss of knowledge caused by the pending retirement of a large segment of an aging U.S. workforce compounded by a sharp reduction in the available younger members of the U.S. workforce concerns industry analysts (“Boomers and the Economy’s Future,” 2007; Capretta, Clark, & Guangrong, 2008; “The Labor Market for Teachers,” 2010, p. 510; Myers, 2008). Of specific interest is the reduction of military effectiveness the loss of knowledge might create (DeLong, 2005). Although current economic conditions have produced a delay in retirement for many members of the U.S. workforce and lessened the potential demands on the workforce available to industry caused by the reduction in available workers (Schulaka, 2009), the delayed retirement has not lessened the impact on the U.S. Army’s mid-career officers due to the application of a mandatory promotion system (“Department of the Army Regulation (AR) 135-155,” 2004). Ongoing reorganizational activities of the U.S. Army labeled *Army transformation* have increased the demand for the Army’s middle-management personnel represented by junior- and middle-grade officers. To meet the increased demand for middle-grade officers, the U.S. Army leaders shortened the time officers must spend in the junior grades before being promoted to the middle grades (“Department of the Army Regulation (AR) 135-155,” 2004). The efforts to accelerate promotions still do not address the problem created by the reduction in the number of people available in the workforce.

The results of the exploratory Q-methodology study might be useful in expanding the knowledge of the relationship between the career expectations of middle-grade U.S. Army officers and the methodology used by U.S. Army leaders to lessen the impact of

voluntary turnover of middle-grade officers. The study population included U.S. Army reserve component captains and majors who had left full-time active duty service in the U.S. Army within the past 24 months. At the completion of their contractual obligation, officers have three options: (a) remain serving full-time in the active component, (b) transfer to part-time service in one of the U.S. Army's reserve components, or (c) discontinue serving in the U.S. Army. Reserve component officers may discontinue serving at any time by resigning their commission. The focus of the study was to determine which factors influenced the decision of an officer to remain serving part-time in the U.S. Army's reserve components (the second option above). Within the Q-methodology approach, respondents provided information regarding the factors that influenced their decision to continue serving in a reserve component of the U.S. Army.

### **Background**

Understanding the factors that influence middle-grade officers to remain in the reserve component is critical for U.S. Army leaders to accomplish staffing objectives and end-state goals of an operationally ready reserve component force ("Department of the Army Field Manual (FM) 3-0," 2008). As U.S. Army planners project their requirements to meet potential threats to the United States, a large number of components are considered ("Department of the Army Field Manual (FM) 100-11," 1998). To manage all the components, Army leaders developed a number of information management systems ("Department of the Army Field Manual (FM) 100-11," 1998). The initial process through which the U.S. Army leaders attempt to project the military force requirements necessary to meet the needs for U.S. national defense is Total Army Analysis (TAA). During the Cold War era, 1945–1989, TAA was a threat-driven process

with unconstrained resources, but after the dissolution of the Soviet Union, the process became budget driven (“Department of the Army Field Manual (FM) 100-11,” 1998) constrained by the money the U.S. Congress will appropriate in the annual defense appropriation (“Department of the Army Field Manual (FM) 100-11,” 1998).

TAA is a 2-year process, with the first year devoted to determining the military force requirements necessary to meet U.S. Defense Planning Guidance. The second year involves determining which requirements will be included in the U.S. Department of Defense budget request and where the U.S. Army leaders are willing to accept risk. During TAA, the U.S. Army’s leaders determine to what level they will allocate resources to the principal components of the U.S. Army. The components are numbered one through nine, with the principal focus placed on numbers one through four. Component 1 is the active duty or full-time force. Component 2 is the National Guard and Component 3 is the U.S. Army Reserve. Components 2 and 3 comprise the reserve components or part-time force. Component 4 contains a list provided by U.S. Army leaders of component U.S. Army organizations that are required but will not be included in U.S. Department of Defense budget request for funding. The objective of TAA is to provide U.S. Army leaders a path to build the Army’s personnel and equipment over a 5-year period (“Department of the Army Field Manual (FM) 100-11,” 1998).

After TAA is complete, the results are entered into various other U.S. Army management systems. The Army management system that might be influenced by the results of the study is the Army Training Requirements and Resourcing System (ATRRS), a 5-year cycle with multiple phases. The ATRRS cycle begins with the Structure Manning Decision Review (SMDR). During SMDR, the U.S. Army leaders

attempt to determine the personnel and training requirements needed to support the military force developed during the TAA process. Through the SMDR process, U.S. Army leaders consider the number, type, and skill requirements for U.S. Army personnel necessary to staff the structure and operate the equipment requirements developed during the TAA process. A product of SMDR related to the study is setting recruiting goals for officers and establishing a projected number of personnel authorized for the various officer grades.

Officer pay grades were used instead of ranks for the exploratory Q-methodology study. U.S. military services have some differences in the rank names applied to the officer grades. One example of the name differences between branches is an O6 in the U.S. Army is called a colonel, but in the U.S. Navy an O6 is a captain. A captain in the U.S. Army is an O3, while in the U.S. Navy an O3 is a lieutenant. Congressional funding is provided to the U.S. Department of Defense for allocation to the armed services with the appropriation done by grade rather than by rank. Because the study focused exclusively on the U.S. Army, where the O3 grade is the rank of captain and the O4 grade is the rank of major, references to either grade or rank are interchangeable.

The U.S. Army is now staffed by either full-time or part-time soldiers. The combination indicates the need for full-time active-duty personnel to be concerned with staffing the part-time active-duty positions. The complex challenges of staffing the Army are consistent with those found in industry (O'Toole & Lawler, 2008). One example of the complex challenges to retain middle-grade officers is the shift in the generational interests of the group (The Conference Board, 2008). U.S. Army senior leaders are members of the baby boom generation, and middle-grade officers are principally

members of Generation X. The distinction between generations is beginning to blur as members of Generation Y begin reaching the middle-grade officer levels of the U.S. Army. Another example of the complex challenges results from more full-time middle-grade officers choosing to leave military service rather than become members of a reserve component. The reduction in the number of officers choosing to remain in the U.S. Army's reserve components has led to U.S. Army leaders increasing the number of junior-grade officers in Army ranks by encouraging principally middle-grade noncommissioned officers to become officers through a direct commissioning process. The direct commissioning process has mixed benefits for the reserve components, as the process provides junior officers with experience and commitment, but depletes the reserve forces of experienced noncommissioned officers. The U.S. Army name for the direct commissioning process is the Green to Gold program.

U.S. Army leaders currently employ a methodology with a focus on material rewards using a retention bonus system that might offer middle-grade officers from \$35,000 to \$50,000 to remain on active duty (Joyner, 2007). The use of material rewards has created an environment in which being an officer in the U.S. Army is now an occupation rather than a profession (Levy, 2007). Ordóñez, Schweitzer, Galinsky, and Bazerman (2009) contended that the retention goal-setting process used by the U.S. Army is counterproductive to its stated aims because the focus of the goals is numbers and not quality. In their discussion of voluntary turnover, Lee, Gerhart, Weller, and Trevor (2008) contended that although much has been written on voluntary turnover, the subject is not well understood. An unexpected finding was over half the workers who left their employment did so for either family reasons or as a response to an unsolicited

employment offer (Lee et al., 2008). To be effective in recruiting middle-grade officers who leave full-time active-duty service, the reserve components have developed programs that provide opportunities for the middle-grade officers that offset the reasons for leaving the full-time active-duty service. One example of a program that offers an alternative is the Army Reserve's Industrial Partnership Program. The program is an initiative of the Chief of the Army Reserve as a means of gaining broad industry employer support for members of the U.S. Army Reserve.

### **Problem Statement**

Responding to the recent shift in the U.S. national military strategy from symmetrical to asymmetrical warfare, U.S. Army leaders transformed the role of the U.S. Army reserve components (comprised of the Reserve and the National Guard) from a strategic force to an operational force ("Department of the Army Field Manual (FM) 3-0," 2008). Asymmetry indicates

dissimilarities in organization, equipment, doctrine, and values between other armed forces (formally organized or not) and US forces. Engagements are symmetric if forces, technologies, and weapons are similar; they are asymmetric if forces, technologies, and weapons are different, or if a resort to terrorism and rejection of more conventional rules of engagement are the norm. ("Department of the Army Field Manual (FM) 1-02," 2004, p. 1-15)

As an operational force, the U.S. Army Reserve and Army National Guard are now being employed and deployed on a constant basis to support worldwide military operations ("Department of the Army Field Manual (FM) 3-0," 2008). The new role has also produced a change in the mind-set of defense planners, as all U.S. Army components are

now considered to be on active status and not to be used only in case of national emergency.

Where U.S. Army planners once made a distinction between active-duty force and reserve force, the U.S. Army is now defined as either full-time or part-time (“Department of the Army Field Manual (FM) 3-0,” 2008). U.S. military planning no longer includes a reserve force only to be used in cases of national emergencies (“Department of the Army Field Manual (FM) 3-0,” 2008). Because U.S. Army planners now consider the U.S. Army as a single force, the staffing of the reserve components is more critical to accomplishing U.S. national military strategy (“Department of the Army Field Manual (FM) 3-0,” 2008).

As U.S. Army leaders seek to retain middle-grade officers, the focus continues to be on determining why an officer chose to leave active status rather than determining what factors would have caused the officer to remain on active status (Henning, 2006). A focus of the current study was to provide U.S. Army leaders a better understanding of why middle-grade officers chose to remain in the U.S. Army. The original target population for the study was captains and majors who had from 8 to 12 years of commissioned military service and were between 28 and 34 years old. The participants in the study ranged from 7 to over 20 years of commissioned military service and were over 31 years old. Using the Q-methodology for the study provided an opportunity to discover the rationale used by middle-grade officers choosing to continue serving in the U.S. Army’s reserve components and provide the U.S. Army’s leaders with insights on how to retain the critical U.S. Army asset (Henning, 2006).

## **Purpose of the Study**

The purpose of the Q-methodology study was to determine factors that influence middle-grade officers to continue serving in the U.S. Army. As the factors were largely unknown, the study included the use of an exploratory design and standard Q-method practices. Within Q-methodology, the individual represents the variable and not the options presented in the Q-sort (Sexton, Snyder, Wadsworth, Jardine, & Ernest, 1998). During the Q-sort process, participants arranged statements in a rank order from most influential to least influential regarding a decision to remain serving in a U.S. Army reserve component. Results of the Q-sort were analyzed to determine if any common factors or elements exist within the variables (McKeown & Thomas, 1988). Because the analysis was conducted on the results of the Q-sort to determine common elements, the number of participants included in the study was not a significant factor (McKeown & Thomas, 1988).

Upon initial entry to service in the U.S. Army, officers obligate themselves to a period of service. The length of the service depends upon the benefits the officer selected. The target audience for the study was captains and majors currently serving as a member of the U.S. Army's reserve components. The target population represented the U.S. Army's middle management and was a transition for the participant from first-line supervision to management staff assignments. The target audience was over 31 years old. Officers within the target population had reached a decision point in their career where initial service obligations were complete and it was necessary to make the decision to remain or leave the service. The choice to remain in the service requires negotiating a

new contract and usually a commitment to remain in the service until the officer is eligible for retirement.

### **Significance of the Study**

The motivation for the study was to enhance U.S. Army leaders' ability to retain highly qualified middle-grade officers as part of the U.S. Army's reserve component force. Middle-grade officers form the basis for the U.S. Army's middle management and represent a significant investment of national resources in their training and development. The focus of the study was on which factors caused members of the group to continue serving in the Army Reserve or Army National Guard. Most other researchers (Bicego, 2006; Bird, 2006; Bolton, 2002) focused on the factors that influenced members of the group to leave active duty. The exploratory Q-methodology study included a review of additional research to determine if factors that influence middle-grade officers to remain serving in the U.S. Army's reserve components are consistent with industry research (Lipponen, Bardi, & Haapamäki, 2008; Petroni & Colacino, 2008; Wolfe & Loraas, 2008).

### **Significance of Study to Leaders**

The significance of the study was to gain a better understanding of the factors that influence U.S. Army middle-grade officers to remain serving as members of the U.S. Army's reserve components. Through career progression, middle-grade officers become senior officers; thus, the retention of middle-grade officers becomes an imperative of succession planning (Kovach, 2005). Although much of the demand for middle-grade officers results from U.S. involvement in current conflicts, the projections are that the nature of U.S. involvement is unlikely to change other than the location of the

involvement. Changes in U.S. Army generational composition and demographics (Harper, 1991; Valerio, 2006) create other challenges for current U.S. Army senior leaders as they attempt to shape the future force. In recent studies, industry researchers demonstrated a concern for retaining the middle level of management within their workforce as current economic conditions and the reduction of an available workforce stress the need for conserving resources and protecting human capital investments (Koszegi & Li, 2008; Kräkel, 2008; Mihajlović, Živković, Prvulović, Štrbac, & Živković, 2008).

### **Nature of Study**

Q-methodology design permitted me to quantify subjective opinions, and resulted in a deeper, richer understanding of the motivating factors in the decision process that resulted in the decision to continue serving in the U.S. Army as a member of a reserve component (S. R. Brown, 1980). Q-methodology originated as an alternative to R-methodology (Stephenson, 1953, 1980) to provide a way to research phenomena that are subjective and thus not suited to the standards of hypotheses used in R-methodology. The exploratory Q-methodology study involved soliciting the subjective factors that influenced participants' decisions to remain serving as members of the U.S. Army's reserve components.

A review and evaluation of research methods revealed that the Q-methodology, a true mixed method, would produce superior results to grounded theory or ethnography. Q-methodology also produces superior results to the pure survey method and experimental or correlational methods. Q-methodology offered the best match for the subject of the study and the target audience. Capturing subjectivity is the essence of Q-

methodology. The primary data source for the study was the target audience of captains and majors who had chosen to continue their service in a U.S. Army reserve component. Using a standard Q-methodology approach provided a combination of subjective data found in a qualitative study and the factor analysis of a quantitative study and allowed for a deeper understanding of the factors that influenced the members of the target audience to make their decision (Creswell & Plano Clark, 2007) to remain serving in a U.S. Army reserve component.

### **Research Questions**

Creswell and Plano Clark (2007) acknowledged that although the specific components of a mixed-methods research question are not completely defined in current literature, the research question must provide data that may be subjected to analysis. “Q-methodology would seem to hold special promise for those seeking to make more intelligible and rigorous the study of human subjectivity” (McKeown & Thomas, 1988, p. 12). As the study was an exploratory study, the research questions needed to be consistent with the research design (Creswell & Plano Clark, 2007). The two research questions for the exploratory Q-methodology study were as follows:

RQ1: What factors influenced the decision of captains and majors to remain serving as a member of the U.S. Army reserve component?

RQ2: What senior leader behaviors influenced the decision of captains and majors to remain serving as a member of the U.S. Army reserve component?

### **Theoretical Framework**

The use of systems theory as influenced by complexity and decision theory served as the theoretical framework for the study because complexity and decision theories

provide for areas or systems of influence within multiple contexts. The problem-solving process used by military planners serves as the foundation for systems theory (Bell, 2005) and is an outgrowth of the emphasis on engineering at the U.S. military academies. Within the limited scope of the exploratory Q-methodology study, the early concepts of the systems theory now called hard systems are applicable on two levels of systems theory. The first level of the systems theory is the role of middle manager the target audience plays within the personnel staffing of the U.S. Army. The first level was viewed from the perspective of complexity theory that might include individual, group, or societal influences on the decision rationale (Arthur & McMahon, 2005). The second level of systems theory was the application of the military decision-making process (MDMP) practiced by the participants as part of their military career development and was considered within the context of decision theory.

**Systems theory.** The roots of systems theory go back to the operational research conducted by the U.S. and British military during World War II, 1942-1945 (Bell, 2005). The observation that “every model is ‘observer dependent’” (Bell, 2005, p. 474) leads to the early 21st-century use of systems theory, which is an attempt to manage complexity and chaos as “no single model can capture the incommensurability of the world: choice, purpose, intentionality, and perspective are inescapable” (Bell, 2005, p. 474). Within systems theory, the focus of the exploratory Q-methodology study was on two principal influences on the U.S. Army staffing system: content influence and process influence (Arthur & McMahon, 2005). Content influences are applicable to the discussion of the middle manager role in the military system, and participants use process influences during the decision-making process.

**Complexity theory.** According to C. Brown (2006), “Complexity theory places events within a matrix recognizing that while simple relationships between two elements can occur, more complex interrelationships between multiple dynamic influences occur as well” (p. 588). The focus on subjectivity within Q-methodology provided a valid mechanism to capture the complexity of the individual experiences that factored into the decision to remain serving in a U.S. Army’s reserve component. In the exploratory study, these factors became part of an influence matrix. Using a Q-sort, the participants established their own hierarchy of influences that resulted in the decision to remain serving in the U.S. Army. Because each individual’s experiences are unique, the individual participant was considered a system within the larger, more complex system of the U.S. Army. Within the observer-dependent model, the participant is represented as a complex matrix of a constant set of variables along the axis of public self to private self and abstract values to concrete values (Schleicher & McConnell, 2005). The exploratory study involved an attempt to determine if patterns in the decision-making rationale exist.

**Decision theory.** Decision theory represents a tool by which actual results of a decision might be compared to the anticipated or expected results of a decision (Bermúdez, 2009). Within the U.S. Army’s operational structure, the term *action officer* commonly applies to the individual given responsibility for the oversight of a project. The target population for the study comprised the grouping where the action officer is most commonly found. Retention of the group is essential within the U.S. Army’s method for accomplishing tasks (Henning, 2006). The U.S. Army process used by the group to make decisions is the MDMP, which is taught at the earliest stages of an officer’s career development. The MDMP is representative of its own unique systems

with its defined sequence of events designed to produce a decision recommendation. The participants of the study had practiced MDMP on a regular basis throughout their military career.

According to Bermúdez (2009), “Decision theory, as standardly developed, is a theory of how to choose rationally, and hence by extension of how to act rationally, in decision-situations that take a particular form” (p. 5). The basis of Bayesian decision theory is a mathematical theory of choice rooted in the thinking of rationality (Bermúdez, 2009). A choice or selection of an option with the most desirable outcome represents an application of the Bayesian decision theory (Bermúdez, 2009) and is a claim for objective, rational thinking (Peterson, 2008).

Non-Bayesian decision theory counters with a claim of subjectivity as an influence in the decision process (Peterson, 2008). Experiences of risk can have a cumulative influence on the dynamic decision process, producing strong subjectivity as a major factor in the decision (Abdellaoui & Hey, 2008). Parmigiani and Inoue (2009) confirmed the dynamic decision process as part of an individual learning to make decisions with experiences influencing present and future decisions. A controversy in the discipline of statistics contained in Parmigiani and Inoue’s study and related to the exploratory Q-methodology study is the application of data as being either descriptive or inferential. In the presentation of data, information might be available for general use or placed within a specific context (Parmigiani & Inoue, 2009). For the exploratory Q-methodology study, context played an important role in the participants’ decision process.

## **Definition of Terms**

The U.S. Army as the setting for the Q-methodological study necessitated the use of unique terms. The definitions provide the meaning for terms used in the exploratory Q-methodology study. The following list provides definitions for various terms frequently used in the Q-method study of U.S. Army planning processes:

*Army National Guard:* The U.S. Army force organized under U.S.C. Title 32 that falls normally under the control of the governor of the state where it is located, but which might be called to federal active service to support U.S. national military strategy (“Department of the Army Field Manual (FM) 100-11,” 1998).

*Army reserve components:* The combination of Army National Guard and U.S. Army Reserve forces available to support the active-duty U.S. Army’s federal mission (“Department of the Army Field Manual (FM) 100-11,” 1998).

*Army Training Requirements and Resourcing System (ATRRS):* The ATRRS is the Department of the Army Management Information System of record for managing student input to training. The online system integrates work force requirements for individual training with the process by which the training base is resourced and training programs are executed. The automated support tool establishes training requirements, determines training programs, manages class schedules, allocates class quotas, makes seat reservations, and records student attendance (“Department of the Army Field Manual (FM) 100-11,” 1998).

*Baby boomer:* The generational group consisting of individuals born between 1946 and 1964.

*Generation X:* The generational group consisting of individuals born between 1965 and 1980.

*Generation Y:* The generational group consisting of individuals born between 1981 and 2000.

*Iron Curtain:* Countries primarily in Eastern Europe aligned politically with the Communist ideology of the former Soviet Union.

*Junior-grade officer:* U.S. Army officers in the first phase of their military career development process. Junior-grade officers include officers from entry into U.S. Army career as second lieutenant through their first three years as captain.

*Middle-grade noncommissioned officer:* U.S. Army noncommissioned officers with the rank of sergeant, staff sergeant, or sergeant first class.

*Middle-grade officer:* U.S. Army officers in the second or middle phase of their military career. Middle-grade officers include officers from promotable captains through recently promoted lieutenant colonels.

*Military Decision-Making Process (MDMP):* A five-step process used to make decision recommendations on operational issues. MDMP is the first step used at each operational level to determine task requirements and develop operational plans (“Department of the Army Field Manual (FM) 3-0,” 2008).

*Structure Manning Decision Review (SMDR):* The SMDR is a process of categorizing the Army’s training requirements (“Department of the Army Field Manual (FM) 100-11,” 1998).

*Total Army Analysis (TAA):* TAA is the process by which the U.S. Army establishes the numbers and types of units it will have. TAA determines the force

structure that is the essential architecture of the U.S. Army and is the basis for the U.S. Army's program objective memorandum and budget submission ("Department of the Army Field Manual (FM) 100-11," 1998).

*U.S. Army Reserve:* The Army force organized under U.S.C. Title 10 that is employed exclusively to support the federal mission of the U.S. Army in accordance with U.S. national military strategy ("Department of the Army Field Manual (FM) 100-11," 1998).

### **Assumptions**

The five assumptions relative to the study are as follows: (a) participants were representative of the target population, (b) participants responded honestly, (c) the Q-sample was appropriate, (d) participants had adequate comprehension of the Q-sort process, and (e) participants would return their Q-sort exhibiting their opinions related to the topic. After they received written instructions, an assumption was that participants would have adequate comprehension to complete the Q-sort. The accuracy and validity of the study depended on honest and complete responses by the target audience. "Using this method, researchers can construct a theoretically based measure in which the respondents restructure information to reflect their interpretations" (Aitken, 1988, p. 1).

The target population for the study would be captains or majors who are currently serving as a member of the U.S. Army Reserve or National Guard. The design of the website database used to collect participant's input restricted participation in the survey to this target population. The Q-sample met established Q method criteria for an appropriate sample size. Use of PQMethod software for analysis of data allowed me to

validate the honesty of the participants and the adequacy of the participant's comprehension of the Q-sort process.

### **Scope, Limitations, and Delimitations**

**Scope and delimitations.** The available population of Army reserve component officers choosing to respond to the request comprised the scope of the study. The use of Q-methodology delimited the scope of the study, which allowed for a study of a small population. Because the study focus was on the positive action of choosing to remain serving in a U.S. Army reserve component, the participants were expected to participate in the Q-sort process without any fear of negative consequences. The study was designed to accept participants in a random procedure and did not reflect actual Army personnel demographics.

Participant demographics were not relevant, as the exploratory study was designed to develop hypotheses that future studies might expand (Creswell & Plano Clark, 2007). The preferred approach to Q-method research is through personal interaction between the researcher and the study participants (Watts and Stenner 2012). The wide spread geographic locations for the participants of this study provide the justification for conduct of a web based survey.

**Limitations.** Using the Q-methodology to examine a small sample limited the ability to generalize the findings to a larger population. Because the study was exploratory, the results provide an opportunity for further research to a larger population as researchers might develop and explore hypotheses (Creswell & Plano Clark, 2007). As a study of human subjectivity, the Q-method study reflects only the views of the

participants (McKeown & Thomas, 1988). Using Q-methodology permits a researcher to use a smaller sample than required in other research designs (McKeown & Thomas, 1988). Although a small sample size limits a researcher's ability to generalize the findings, the purpose of Q-methodology is not to determine how many people hold to what opinion but to understand why the people believe what they do (Sexton et al., 1998).

### **Summary**

A goal of the exploratory Q-methodology study was to identify factors that influence middle-grade officers to remain in the U.S. Army's reserve components and continue their U.S. Army service. The reduction in the available workforce for the group and the increased demand created by the change in the U.S. Army's reserve components from a strategic to an operational force cause the new demand to be a concern for U.S. Army leaders. "The problem with experience is it takes 10 years to develop an officer with 10 years of experience" (T. Morgan, personal communication, May 9, 2008). By the time officers reach middle grade, Army leaders have invested a substantial amount of time and money in the group. Retention in the group becomes an important issue as Army leaders attempt to gain an expected return on investment for their efforts.

Focusing on the positive aspects of the retention issue, the findings of the study include insights into influences that produce the decision for middle-grade officers to remain serving in the U.S. Army's reserve components. These factors influence future leaders training and officer career development by providing senior U.S. Army leaders insights into the motivation of middle-grade officers. A goal of the research was to provide senior leaders information on which they can build effective training programs

for senior leaders. Major General P. Gravett (personal communication, September 9, 2009) commented, “Learning doesn’t stop when someone is promoted to general.”

Chapter 2 contains a discussion on current issues and foundational literature, providing background knowledge for the research study. The chapter includes a review of the U.S. Army’s personnel management system and the history of the role of the U.S. Army officer. The review of literature on research methods provides background for the selection of Q-methodology for the research study.

## Chapter 2: Review of Literature

The purpose given in Chapter 1 for the exploratory Q-method study was to establish an opportunity to explore the factors that influence Army middle-grade officers to remain serving in a U.S. Army reserve component after completing any statutory obligation. The retention of these officers in continued service is critical to the efficient operation of the Army and U.S. national security. The objective of the research was to identify common factors that might have been significant in the decision-making process. The literature review includes many original source documents and an overview of the historical development of the U.S. Army's reserve components, the applicability of Q-methodology to the study, and the integration of the participants into systems theory.

The Army reserve components consist of the U.S. Army Reserve and the Army National Guard. During the 1990s, U.S. Army leaders published two Offsite Agreements, "so called because the discussions leading to them often took place away from the Pentagon" (Bennett, 2002, p. 69) that provided recommendations for the U.S. Army reserve components. The first in 1993 divided the functional specialties of the U.S. Army between the U.S. Army Reserve and the Army National Guard. The agreement transferred all combat forces to the Army National Guard. Combat forces include infantry, armor, and special forces. All combat service support forces were transferred to the U.S. Army Reserve. Combat service support forces include quartermaster, transportation, ordinance, and medical forces. Combat support forces were divided with aviation and artillery transferred to the Army National Guard and the remainder transferred to the U.S. Army Reserve. These combat support forces included

civil affairs, psychological operations, signal, military police, engineer, and chemical forces.

The alignment of U.S. Army component organizations was significant to the study as the types of U.S. Army component organizations transferred to the U.S. Army Reserve require more middle-grade officers than do the component organizations transferred to the Army National Guard. The result of the agreement requires officers with the rank of captain and major to be infused into the personnel system for the U.S. Army Reserve. The component organizations allocated to the U.S. Army Reserve do not require sufficient entry-level positions, lieutenants, to fill the required captain positions as part of a normal career development pattern. The 2009 National Defense Authorization Act (U.S.C. Title 10) authorized the U.S. Army Reserve 6,553 lieutenants (O1 and O2), 8,542 captains (O3), and 8,718 majors (O4).

### **Documentation**

The research included an extensive search of scholarly journals and texts, peer-reviewed articles, and military publications. The principal areas of search focused on using systems theory, employee motivation and incentives, and military policy. The focus of the literature search was on materials published after 2007; however, many older documents were used for historical reference.

Database searches included ProQuest, Net Library, EBSCOhost, Education Resources Information Center (ERIC), Army Knowledge Online (AKO), ProQuest Dissertations and Theses, Dissertation and Thesis @ University of Phoenix, and SAGE Publication Library. Internet searches used Google and Bing. To research systems theory, key words *systems theory*, *decision theory*, *appreciative inquiry*, *positive*

*organizational scholarship*, and *complexity theory* were used in the database searches of ProQuest and EBSCOhost. *Employee incentives*, *employee retention*, *employee development*, *mid-level management development*, and *senior-level management development* were the key words used for the database search of employee motivation and incentives. The database search for employee motivation and incentives was expanded to include ProQuest Dissertations and Theses, Dissertation and Thesis @ University of Phoenix, and SAGE Publication Library. The search for military policy included the key words *Army reserve component history*, *national military strategy*, and *U.S.C. Title 10 and 32* using the databases of ERIC and AKO. Orange County Public Library, Langson Library at the University of California—Irvine, NetLibrary, and SAGE Publication Library provided background on Q-methodology. These multiple searches provided access to over 15,000 published books and journals. Table 1 contains the sources for relevant books, journals, and papers. A search of dissertations on military retention found two studies, both on enlisted retention in the National Guard.

### **The U.S. Army Officer**

The traditions of the U.S. military are young when compared to the traditions of the military in European countries (“Department of the Army Pamphlet (DA PAM) 600-2,” 1988). In 1775, at the beginning of the Revolutionary War, a common practice to become a military officer in Europe was to purchase a commission from the royal family of the country. Because that practice was not compatible with the American concepts of democracy, an alternative practice of electing officers was instituted in the U.S. Army (“Department of the Army Pamphlet (DA PAM) 600-2,” 1988). The practice of electing a unit’s officers was abandoned by the Regular Army soon after the founding of the

United States and the military academies. The practice of electing a unit's officers continued within the National Guard and militia forces into the 20th century ("Department of the Army Pamphlet (DA PAM) 600-2," 1988). Now officers in the Regular Army, the U.S. Army Reserve, and the National Guard with federally recognized commissions are commissioned as officers in the military by the president of the United States.

Table 1

*Category Search Results*

	Q-method research	Systems theory	Employee motivation and incentives	Military policy
EBSCOhost	6	25	29	0
ProQuest	4	4	8	0
SAGE Publication Library	3	6	3	0
ProQuest Dissertations and Theses	6	0	0	6
Dissertation and Thesis @ University of Phoenix	2	0	0	3
Education Resources Information Center and Army Knowledge Online	0	0	0	5
NetLibrary, Orange County Public Library, and University of California-Irvine Library	6	5	3	6

*Note.* Searches occurred periodically since September 2009.

The National Guard might have officers commissioned by a governor to be a member of the state's National Guard. Federally commissioned officers in the National Guard might hold a state rank, usually of a higher grade, in addition to their federally recognized rank ("Department of the Army Regulation (AR) 135-100," 1994). The importance of the distinction is that the federally recognized rank is the only authorized rank a National Guard officer may wear outside the state. Because the National Guard position is either appointed by a governor or elected by the general population, the most

visible example of the status is the adjutant general of the state (“Department of the Army Regulation (AR) 130-5,” 2001).

U.S. Army Reserve officers are members of U.S.C. Title 10 organizations and have only federal commissions. Whereas Army National Guard forces are organized by state and report through their chain of command to the Adjutant General of their state, the U.S. Army Reserve is organized currently into functional commands that report to the U.S. Army Reserve Command. As the result of the Base Realignment and Closure Act 2005, U.S. Army Reserve Command was moved from Fort MacPherson, Georgia, to Fort Bragg, North Carolina, in 2011.

### **Army Officer Management and Career Development System**

Three broad categories are used to define and manage the career development process of an U.S. Army officer: company grade officer, field grade officer, and general or flag officer. Company grade officers are those with the ranks of second lieutenant or grade of O1, first lieutenant or grade of O2, and captain or grade of O3. Field grade officers are those with the ranks major or grade of O4, lieutenant colonel or grade of O5, and colonel or grade of O6. General grade officers are those with the ranks of brigadier general or grade of O7, major general or grade of O8, lieutenant general or grade of O9, and general or grade of O10. For general officers, there is a fifth grade of general of the Army, which is used in total global conflict. The last use of the general of the Army rank was in 1944 during World War II. As part of the annual Defense Authorization Act, Congress establishes the number of each of these grades authorized for the U.S. Army’s active component, the U.S. Army Reserve, and the federally recognized Army National Guard (“Department of the Army Pamphlet (DA PAM) 600-3,” 2010).

**Defense Officer Personnel Management Act (DOPMA).** The purpose of the U.S. Army's Officer Personnel Management System is to provide U.S. Army leaders with a management system to acquire, develop, utilize, sustain, promote, and transition U.S. Army officers ("Department of the Army Pamphlet (DA PAM) 600-3," 2010). Guiding the personnel management system is the Defense Officer Personnel Management Act (DOPMA) of 1981, which set limits on the number of officers who can be in full-time active-duty status in the active component ("Department of the Army Pamphlet (DA PAM) 600-3," 2010). DOPMA additionally established the promotion flow and other personnel management processes into a common pattern between all branches of the U.S. military ("Department of the Army Pamphlet (DA PAM) 600-3," 2010).

Under the practices established by DOPMA, officers are managed collectively by year-groups with the year beginning on the graduation date for the U.S. Military Academy. Standard time-in-grades for officers are 4 years as a second lieutenant (O1) to be promoted to first lieutenant (O2), 5 years to be promoted from first lieutenant(O2) to captain (O3), 7 years to be promoted from captain (O3) to major (O4), and 7 years to be promoted from major (O4) to lieutenant colonel (O5). No time-in-grade requirements were specified for promotions above lieutenant colonel. Based on the needs of the U.S. Army, time-in-grade requirements could be shortened; however, officers not promoted by the end of the established time-in-grade were released from active duty service. Officers released from active duty could retain their commissioned rank by joining one of the U.S. Army's reserve components.

**Reserve Officer Personnel Management Act (ROPMA).** The Defense Authorization Act of 1995 included the Reserve Officer Personnel Management Act

(ROPMA), which aligned the reserve forces with DOPMA (“Department of the Army Pamphlet (DA PAM) 600-3,” 2010). Prior to the passage of DOPMA, reserve component officers could serve as full-time active duty, but were considered part of the Army of the United States. Army of the United States promotions were not considered reserve component promotions, as the officer had to be serving in a reserve component to be promoted in that component (“Department of the Army Regulation (AR) 135-155,” 2004). The result of the promotion practice was a group of officers with multiple promotion dates for the same rank (Schirmer, Thie, Harrell, & Tseng, 2006). ROPMA aligned the time-in-grade and time-in-service requirements so the active and reserve components could be managed by the same system. The Base Realignment and Closure Act of 2005 caused the merge of the active component Army’s personnel management center in Virginia with the reserve component personnel management center in Missouri by relocating both to Fort Knox, Kentucky (Masi, Wong, Boon, Schirmer, & Sollinger, 2009). For the Army National Guard, only the federally recognized promotions fall under the coverage of DOPMA and ROPMA, as individual states continue to have the authority to promote officers in accordance with their individual state policies and practices (Schirmer et al., 2006).

### **Theoretical Framework**

The Officer Personnel Management System is one of many processes used by Army planners to achieve objectives established in Defense Planning Guidance (“Department of the Army Pamphlet (DA PAM) 600-3,” 2010). Military processes served as the foundation for the systems theory (Bell, 2005) and were an outgrowth of the emphasis on engineering at the U.S. military academies. Within the limited scope of the

study, the early concepts of the systems theory now called hard systems were applicable on two levels of the theory. Considerations within the theoretical framework included a perspective found in appreciative inquiry (AI) and positive organizational scholarship (POS).

“Appreciative Inquiry can be defined as any inquiry that creates an appreciating effect” (Bright, 2009, p. 3). AI adds to POS, which is a unique approach to conducting research with an objective of promoting positive deviance (Bright, 2009). A valid criticism of AI and POS is that the negative side of organizational reality is ignored in the process (Hackman, 2009); however, the opposing arguments regarding ignoring positive organizational research might be as valid. POS can be seen “as a ‘fresh lens’ whose application renders visible organizational dynamics that have been previously overlooked or underdeveloped” (Golden-Biddle, 2006, p. 199). The focus of the exploratory Q-methodology study was the positive decision to remain a member of the Army reserve component rather than the negative decision to leave military service.

The first level of systems theory is the role of middle manager the target audience plays in staffing the U.S. Army. “Organizational behavior theorists tend to view the organization as a system, where changes in one subsystem can have far reaching impact throughout the organization as a whole” (Wienclaw, 2008, p. 1). A continual shortage of the reserve component middle-grade officer would affect the efficiency and effectiveness of the reserve components and the Army.

The second level of the systems theory is the application of the MDMP practiced by the participants as part of their military career development. The use of systems theory as the framework becomes the theoretical foundation for the study because

systems theory provides for areas or systems of influence within multiple contexts. The contexts might include individual, group, or societal influences on the decision rationale (Arthur & McMahon, 2005).

The exploratory Q-methodology study involved considering the aspects of complexity theory and decision theory as they relate to the concepts of general systems theory. Complexity theory applies as the U.S. Army's multiple management systems exemplify a complex organization with many parts requiring synchronization. As the purpose of the exploratory Q-methodology study was to investigate the subjects' motivation for having made a decision, decision theory formed a major part of the study's foundation.

**General systems theory.** The origin of the concept of a system might be at the beginning of Western philosophy in the Aristotelian view that the whole represents more than a sum of the parts (Von Bertalanffy, 1972). Systems theory as described by Von Bertalanffy (1972) came as a response to the scientific method of Descartes, which held that a system could be segmented into individual components for analysis and these individual components could be placed in a linear fashion to describe the system in its totality (Walonick, 1993). Von Bertalanffy (1972) theorized that the interaction of components characterized a system and that the interaction was nonlinear in nature. The nonlinear nature of a system provided the foundation for Kuhn's (1996) concept of the paradigm shift. Rather than the development of knowledge being an orderly, lock-step process, Kuhn (1996) suggested knowledge expanded to a point where new knowledge or a new paradigm was necessary.

Building on the work of Von Bertalanffy, one his last students, Alfred Locker, expanded the efforts of general systems theory to include “scientific inquiry to where it could reach the realm of philosophy and theology” (Locker, 2006, p. 297). One conclusion of the effort was that a researcher could never understand the complete system. Churchman recommended that “the designer can simplify his or her role by concentrating on one part at a time, making it better and then moving on to other parts” (Linden et al., 2007, p. 848). Consistent with the practice, the current research study involved exploring one aspect of the officer personnel management system to provide a better understanding of the factors that motivated a decision.

Broedling (1999) noted, “Systems theory is a way of thinking. Like any theory, it can be applied as an approach to organizational change or improvement” (p. 273). Using a systems approach, the influencing factors on the decision of U.S. Army officers to remain serving as members of the reserve components were the focus of the current exploratory Q-methodology study. The impact of the decision influences many other parts of the U.S. military planning process, intentionally or not (Broedling, 1999). The decision by a U.S. Army officer to become a member of the U.S. Army’s reserve component represents an aspect of individual development and growth that may be built on a premise of system constructs being applicable to personal growth and development (Amerikaner, 1981). The individual’s role as part of a social organization is addressed at the eighth level of Boulding’s skeleton of science model, where Boulding defined the social organization or system as a set of roles linked together by communication channels (Wilby, 2006).

Felix (2003) proposed a taxonomy of management systems that can be applied to the U.S. Army. The four adaptive stages of the taxonomy include traditional control systems, modern controlling systems, double-loop management systems, and flowing-equilibrium management systems. Of these systems, only the traditional control system is a closed system. Each of these management systems can be identified as the characteristic style of some U.S. Army organization. The infantry squad in a combat scenario will employ traditional control systems. That these management systems coexist within an organization (Felix, 2003) signals the basis for a complex organization.

The role of the officers in the study population is critical to the smooth and efficient functioning of the U.S. Army as an organization (Wilby, 2006). Captains and majors serve two critical functions within the personnel management system of the Army. First is the role of the captain as the first-line supervisor for the entry-level officer, lieutenant. Captains also begin their own transition to staff advisor for larger organizations and promotion to major. At the rank of major, the officer's role shifts to management of programs where they provide background information required in senior-level decision-making processes.

**Complexity theory.** An outgrowth of the general systems theory is the complexity theory, which holds that a system such as the U.S. Army's personnel management system is so large and complex that individuals cannot understand their individual influence on the system (Howard, 2010). The process of creating complexity has also created a multiplicity of paradoxes for the individual and the organization, which increases the difficulty for an individual attempting to make an informed decision (Howard, 2010). The paradox is while the individual has access to unlimited volumes of

information, none of the information provides a means to make a wise decision (Howard, 2010). Semetsky (2008) noted that for an individual to become comfortable with organizational complexity, the individual must first accept the ancient principle to know thyself.

Mukherjee (2008) used government as an example of a complex system, as government operates on a number of levels. The U.S. Army likewise operates on several levels, beginning with a squad or team and progressing upward through a platoon to a company, battalion, brigade, division, corps, and ultimately an army (“Department of the Army Field Manual (FM) 100-11,” 1998). A complex system is characterized by “a multiplicity of simultaneously interacting variables; non-linear and dynamic causal interactions; ill defined boundaries; the emergence from interactions of new variables that could not have been predicted for circumstances prior to the interaction; and a tendency towards self organization” (Radford, 2008, p. 510). U.S. Army leaders are trained to function within a complex system (“Department of the Army Field Manual (FM) 6-22,” 2006).

Complexity theory supports a holistic perspective to a systems approach of knowledge management (Paucar-Caceres & Pagano, 2009). As U.S. Army leaders seek to build the experience and knowledge at each level of management organization, the retention of the middle-grade officer becomes critical to effective knowledge management (“Department of the Army Field Manual (FM) 3-0,” 2008). Nonaka and Takeuchi (1995) stressed the consideration of knowledge management within a holistic model and encouraged the abandoning of knowledge creation as part of a mechanistic model. Army leader development consists of a process built in three spheres. These

spheres consist of a progression of organizational assignments with increasing levels of responsibility, training received at various Army schools, and the individual's personal initiative ("Department of the Army Field Manual (FM) 7-0," 2002). The process adds to the complexity of the Army's leader development process as no two officers' experiences are the same, and thus each officer will make his or her own contribution to the total management of the U.S. Army ("Department of the Army Pamphlet (DA PAM) 600-3," 2010). According to Hannah, Woolfolk, and Lord (2009), "Complex organizations call for varied leader roles and the self-aspects appropriate for those roles" (p. 275).

As U.S. Army leaders face a changing environment, "complexity theory provides the missing theory of how cognition happens in social systems, which has been lacking from both knowledge management and organizational learning theory" (Mischen & Jackson, 2008, p. 316). Adding to the complexity in research methods, Mischen and Jackson (2008) cited a lack of integration caused by the variety of disciplines from which researchers approach the subject of knowledge management. Knowledge management challenges caused by changing environments are not new to U.S. Army leaders.

From a global perspective, U.S. military opponents since 1945 in World War II have become U.S. military allies, and some U.S. military allies in World War II became U.S. military opponents. By 2010, some of these military opponents had returned to being U.S. military allies. U.S. opponents are classed as either state actors, such as North Korea or Iran, or nonstate actors, such as Al Qaeda or the Taliban. Nonstate-actor combatants create a new dimension of complexity for U.S. Army planners as they must, in the early 21st century, consider an opposition force that does not have geographic parameters or constraints (Army Leadership, 2002; "Department of the Army Field

Manual (FM) 6-22,” 2006). The increase in complexity resulting from a more unordered global environment will affect knowledge management (Crawford, Hasan, Warne, & Linger, 2009).

Complex systems are characterized as systems with many interacting components or agents, yet might have significant structure or organizational design (Mukherjee, 2008). U.S. Army leaders seek to develop future leaders who are able to adjust to the nonlinear environment that is characteristic of the complex system (“Department of the Army Field Manual (FM) 6-22,” 2006; Mukherjee, 2008). An understanding of complexity theory aids in the development of these officers, as complexity theory features a nonlinear and unpredictable environment (Kemp, 2009). Integration of the middle-grade officer into the U.S. Army’s personnel management system can be a challenge given the complexity of the organization and the lack of literature on how the manager is integrated into the process (Salem, 2008).

Howard (2010) projected the next paradigm shift in society will be a movement from knowledge management where information is key to a society where individuals with an awareness of emotional needs will be sought after and rewarded as the acquisition of knowledge is in the early 21st century. The attribute that will transcend these societies will be leaders (Howard, 2010; Schneider & Somers, 2006). Complexity theory leads to the development of dynamic models that are difficult to evaluate (Schneider & Somers, 2006). As the shift from information to emotions is occurring, a new type of leader who can evaluate a subordinate’s emotional intelligence will be in high demand (Howard, 2010).

**Decision theory.** The origins of decision theory are most closely associated with Thomas Bayes (Bernstein, 1996), a little-known 18th-century English clergyman. The essay for which Bayes is best known was published after his death. Decision theory was an influence for the exploratory Q-Methodology study in two ways. One application of decision theory was the consideration of the methodology used by the participants to reach their decision (Peterson, 2008), and the other application was the evaluation of the evidence developed as part of the exploratory Q-methodology study (Parmigiani & Inoue, 2009). Since the 18th century, Bayesian decision theory has produced diverse applications in a multitude of academic disciplines (Bermúdez, 2009). The principal focus of the current exploratory Q-methodology study was rationality (Bermúdez, 2009).

Bayesian decision theory is based on a mathematical theory of choice rooted in the thinking of rationality (Bermúdez, 2009). Decision theory represents a tool by which actual results of a decision may be compared to the anticipated or expected results of a decision (Bermúdez, 2009). According to Bermúdez (2009), “Decision theory, as standardly developed, is a theory of how to choose rationally, and hence by extension of how to act rationally, in decision-situations that take a particular form” (p. 5). A choice or selection of an option with the most desirable outcome represents an application of the Bayesian decision theory (Bermúdez, 2009) and is a claim for objective, rational thinking (Peterson, 2008).

Non-Bayesian decision theorists counter with a claim of subjectivity as an influence in the decision process (Peterson, 2008). Experiences of risk can have a cumulative influence on the dynamic decision process producing strong subjectivity as a major factor in the decision (Abdellaoui & Hey, 2008). Parmigiani and Inoue (2009)

confirmed the dynamic decision process as part of an individual learning to make decisions with experiences influencing present and future decisions.

A controversy in the discipline of statistics contained in the research presented by Parmigiani and Inoue (2009) and related to the current exploratory Q-methodology study is the application of data that are either descriptive or inferential. The researcher's philosophical perspective was reflected in the position that statisticians produce either knowledge or solutions to problems (Parmigiani & Inoue, 2009). Knowledge resulting from research studies assisting in solving problems is accepted, but the controversy is contained within the context of the discovery process as information available for general use or information placed within a specific context (Parmigiani & Inoue, 2009). In the current exploratory Q-methodology study, context played an important role in the decision process of the participants.

The subjective nature of non-Bayesian decision theory might have influenced the information that the participants in the exploratory Q-methodology study used to validate or confirm their decision (Peterson, 2008). As part of the Q-sort process, participants were expected to experience cognitive dissonance, as not all the information was consistent with their anticipated goals and objectives (Griffin, 1997). In the course of the decision-making process that resulted in the choice to continue serving as a member of the U.S. Army's reserve components, a participant's choice might be counter to the group expectations, producing an internal conflict between personal beliefs and group expectations (Goukens, Dewitte, & Warlop, 2009). Information used to support the individual's views and decision during the Q-sort might not reflect all the information available (Hart, Eagly, Albarracín, & Brechan, 2009). Filtered information might

obscure the reality of the individual's environment (Hart et al., 2009) and produce a decision that might appear not rational; however, the individual's decision represents his or her view of a rational conclusion to the decision process (Bermúdez, 2009).

As reported by decision theorists, how an individual responds to information influences the outcome of the decision process (Epstein, Noor, & Sandroni, 2010). Overreaction to information can cause the information to become distorted and possibly lead to faulty conclusions when the information is considered within the subjective, non-Bayesian decision-making process (Epstein et al., 2010). Overreaction to information is unnecessary as incomplete information or information that is difficult to evaluate might still be processed by applying logic and reason (Briner, Denyer, & Rousseau, 2009).

The participants in the exploratory Q-methodology study had experience in the process of making decisions with incomplete or difficult information, as the application of MDMP does not provide for unlimited time for information gathering ("Department of the Army Field Manual (FM) 3-0," 2008). Computer-aided information storage does not solve the partial information problem, as the decision maker must be able to evaluate the relevancy of the information (Roberts, 2008). To possess more information on which to base a decision could increase the complexity of the process while providing no assurances regarding the validity of the information on which the decision is being made (Roberts, 2008). In the decision process, decision makers might chose information that validates their beliefs and might avoid information contrary to their beliefs (Bermúdez, 2009).

The decision-making process outside the laboratory setting is typically characterized with a number of interrelated and complex concepts that are dynamically

linked (Salmeron, 2009). The dynamic nature of the decision process creates decisions developed over a period of time with new information added to the process in the form of feedback (Leaptrott & McDonald, 2008; Salmeron, 2009; Weibull, Mattsson, & Voorneveld, 2007). The decision maker's ability to accept risk might complicate the subjectivity of the non-Bayesian approach (Hansson, 2007). An increased willingness to accept risk allows the decision maker a wider range of options and a greater freedom of choice (Sugden, 2007). Increased freedom of choice also requires the decision maker to be willing to live with the results of the decision (Sugden, 2007; Weibull et al., 2007). The principle of accepting responsibility for the consequences of a decision is a fundamental characteristic of U.S. Army officer training ("Department of the Army Pamphlet (DA PAM) 600-2," 1988).

The standard practice in MDMP is to weigh or place relative values on the information used to produce the recommended decision ("Department of the Army Field Manual (FM) 3-0," 2008). The practice is supported in research findings on decision-making practices (Morton & Fasolo, 2009). Decision makers tend to make better decisions when they have a greater choice of options, good information, and prompt feedback (Goodman, 2008). Subjective refinement of information interferes with the decision process and might lead to faulty decisions (Bermúdez, 2009). An impact on the final decision is the decision maker's ability to recall necessary information. Less than perfect recall produces inconsistency in the decision maker's choices (Dimitri, 2009). A cause of faulty recall is an excess of information available to the decision maker (Dimitri, 2009). to minimize the amount of information to a manageable level requires refinement

on the part of the decision maker (Bermúdez, 2009), and allow for subjectivity to become part of the decision process.

To make the individual decision process difficult for the participants of the current exploratory Q-methodology study was the aspect of MDMP represented as a group decision process and not an individual decision process (“Department of the Army Field Manual (FM) 6-22,” 2006). Group expectations can influence an individual’s decision (McIntyre & Platania, 2009; Sutter, 2009) and bias the outcome of the decision process. The decision makers’ use of information as a guide to choosing between multiple options was captured in the exploratory Q-methodology study, adding to the body of knowledge in decision theory (Wilke & Todd, 2010).

### **Historical Reserve Component Officer Management Challenges**

The military history of the United States is closely linked to the citizen soldier, as the early settlers were forced to defend themselves in a sometimes-hostile environment. Miles Standish serves as an example, as his role in the settlement of the Massachusetts Bay Colony was to train the other citizens in self-defense. As they wrote the U.S. Constitution, the authors built in provisions that would restrict the size of the U.S. Army and its potential ability to overthrow the constitutional government (Trefry, 2010).

Until the establishment of the Reserve Officer Training Corps in the early 1900s, regular Army officers were graduates of the U.S. Military Academy. Officers in the state militias were normally political appointees with minimal military experience. Service in the state militia was voluntary, with no pay or benefits other than social recognition provided (Doubler, 2010).

**Periods of war and peace.** The U.S. reliance on the patriotism of the citizen soldier instead of maintaining a large standing U.S. Army resulted in the practice of recruiting and training the U.S. Army for each conflict in which the United States became involved (Carlton & Slinkman, 1982). At the completion of the conflict, the citizens would return to their former civilian occupations and the U.S. Army would shrink back to its preconflict size (Carlton & Slinkman, 1982). At the end of the Spanish-American War in 1901, public concerns were expressed regarding how the United States would protect and administer the territories acquired during the war (Doubler, 2010).

In response to these concerns, Congress enacted the Militia Act of 1903, better known as the Dick Act (Doubler, 2010). A significant aspect of the Dick Act was that National Guard soldiers could be called to federal active duty. The act was amended in 1908 to provide funding for training and equipping the National Guard (Doubler, 2010). Also included in the 1908 National Defense Act was a provision that established an Organized Reserve (Carlton & Slinkman, 1982). The Organized Reserve began as a way to retain officers with military medical experience (Carlton & Slinkman, 1982).

**Organized Reserve and World War I.** In 1918, the Dick Act was amended again. One change was to allow National Guard units to be used outside the borders of the United States, and a second change was that National Guard units would be mobilized as units, not as individuals (Doubler, 2010). The Organized Reserve was in its early stages of development as the United States entered World War I in 1917. Thus, the practice of soliciting volunteers and drafting citizens was again used to build the Army (Carlton & Slinkman, 1982). After World War I in 1922, General Pershing recognized the value of the Organized Reserve and supported establishing the Reserve Officers

Association to assist the U.S. Army in lobbying U.S. Congress to support the Organized Reserve (Carlton & Slinkman, 1982). One of the Reserve Officers Association's objectives was to support building a core of officers with military skills and provide training opportunities for the officers to develop their skills (Carlton & Slinkman, 1982).

**World War II to the present day.** As the United States prepared to enter World War II in 1941, the Organized Reserve still consisted only of officers (Carlton & Slinkman, 1982). In 1945, at the end of World War II, the U.S. Army Air Corps was reorganized as the U.S. Air Force and in 1947, the U.S. Department of Defense was created with the U.S. Department of the Air Force being equal with the Army and the Navy (Carlton & Slinkman, 1982). After the Korean Conflict, 1950-1953, and during the Cold War until 1967, many of the U.S. Army divisions were activated as part of the U.S. Army Reserve (Carlton & Slinkman, 1982). The action also changed the U.S. Army Reserves by adding enlisted personnel to its ranks (Carlton & Slinkman, 1982).

In the course of the Vietnam Conflict, 1964-1973, only a small number of reserve component units were mobilized as the U.S. Department of Defense leaders chose to use a force comprised mostly of draftees (Carlton & Slinkman, 1982). After the fall of the Iron Curtain and collapse of the Soviet Union in 1991, the U.S. military began to reduce its size. The cost savings resulting from decreased military spending is commonly known as the Peace Dividend. In 2001, a group of terrorists not sponsored by any country or nation attacked the United States, causing the United States to enter a Global War on Terrorism.

In the middle of the reduction in military strength that occurred from 1991 to 1998, U.S. Army leaders conducted a series of meetings with the reserve component

leaders to draft what is commonly known as the Offsite Agreements. The 1993 agreement determined the types of units each U.S. Army reserve component would be authorized to maintain and support and the targeted end strength of each component. The 1997 Offsite Agreement made further adjustments to the end strength of the reserve component. The significance of the Offsite Agreements was the U.S. Army could no longer engage in a military action without the support of one or both of its reserve components.

The combination of the Offsite Agreements and the Global War on Terrorism beginning in 2001 created an environment of regular rotational periods of extended active duty for all members of the reserve components. The regular rotation periods for the reserve components required U.S. Army planners to consider the employment of its reserve components as an operational force to be integrated into ongoing operations rather than a strategic force that would only be employed if the United States were attacked. The need for a trained reserve component was the basis for the exploratory Q-methodology study to help determine why officers chose to remain in the reserve components.

### **Methodologies**

To put together a research study typically involves multiple phases, that include develop a research question related to the study objective, collect related data, and finally subject the data to analysis and interpretation (Beckman & Earthman, 2010; Cooper & Schindler, 2006). A research study represents a complex process that requires detailed thought and creative planning (Beckman & Earthman, 2010). Some of the complexity in a research study results from the study being not a static process but an evolutionary

process that changes with the completion of every step (Beckman & Earthman, 2010). The step-by-step development in the research process is sometimes referred to as chaining, as research findings build upon one another (Ryan & Nixon, 2010).

A researcher typically has to choose between the two primary methodologies: quantitative or qualitative (Beckman & Earthman, 2010). Quantitative research is typically oriented to description and explanation whereas qualitative research is oriented toward exploration and understanding (Creswell, 2005). Each method has its strengths and weaknesses, with neither being superior to the other (Beckman & Earthman, 2010; Creswell, 2005). To leverage the strengths of both methods, a third option of a mixed-methods research methodology has been employed in more recent research projects (Beckman & Earthman, 2010; Creswell & Plano Clark, 2007).

**Quantitative research.** Quantitative research has its roots in the physical sciences such as physics and chemistry (Creswell, 2005), with an emphasis on statistical analysis. The quantitative researcher seeks to explore the validity of a hypothesis (Beckman & Earthman, 2010; Creswell, 2005) and requires the gathering of extensive data. For the exploratory Q-methodology study, no hypothesis existed to study. Experimental, correlation, and survey represent three types of quantitative research methodologies (Cooper & Schindler, 2006; Creswell, 2005). Creswell (2005) described experimental research as procedures that help a researcher examine the impact of an intervention on the outcome of the process. Correlational researchers study the degree of association between two or more sets of data using standard statistical analysis procedures (Creswell, 2005). The last of the three quantitative methodologies is survey research, which is a research procedure that involves administering a standard survey or

questionnaire to the population under study and includes an attempt to describe the characteristics of that population (Creswell, 2005).

The researcher in a quantitative research study seeks to describe or provide an understanding of the relationship to a phenomenon (Beckman & Earthman, 2010; Creswell, 2005) or to provide a precise measurement of a phenomenon (Cooper & Schindler, 2006). Use of the quantitative research model allows a researcher to build on the strengths of the quantitative procedures by allowing control of the context of the factors and the description of complex situations (Cooper & Schindler, 2006; Creswell, 2005). The weaknesses of the quantitative research model are that the research might not reflect the participant's understanding of the phenomenon, and the study can exclude relevant data because of the specific focus of the study (Cooper & Schindler, 2006; Creswell, 2005). Research conducted over long periods of time that have extensive data available for analysis represents the best types of studies for the application of the quantitative research method (Creswell, 2005).

**Qualitative research.** The quantitative research methodology represents a more traditional approach to research, with the qualitative research methodology being an alternative (Creswell, 2005). Qualitative research has its roots in education research with a focus on “philosophical ideas, procedural developments, and participatory and advocacy practices” (Creswell, 2005, p. 41). Qualitative research is a reaction to the laboratory approach to research that takes participants out of their real-world setting to test some hypothesis and in doing so loses the real-world applicability of the research study (Creswell, 2005).

Researcher subjectivity is a criticism of qualitative research; however, based on the work of Niklas Luhmann, all observations are considered subjective as the researcher approaches research from an established or predetermined point of view (Keiding, 2011). “There is no privileged vantage point from which the interaction can be observed without becoming part of it” (p. 109). Keiding (2011) concluded, “There is no such thing as an objective or neutral observation” (p. 113) in conducting research. Research might consist of analyzing solutions to problems as well as analyzing the solution process (Knudsen, 2011).

The principal characteristics or strengths of qualitative research are the recognition that (a) the researcher needs to listen to the views of the participants, (b) data need to be collected where people live and work, and (c) research does have a role in advocating for change (Creswell, 2005). Grounded theory and ethnography are examples of qualitative research methods. In the use of grounded theory, the researcher seeks to generate a theory regarding a phenomenon as a product of the data generated during the study (Cooper & Schindler, 2006). A researcher employs the ethnographic methodology in a research study seeks to describe some aspect of human culture (Cooper & Schindler, 2006). The ethnographic research method is common in archeological research studies (Cooper & Schindler, 2006). The weakness of the qualitative methods is the belief that “qualitative data are too subjective and susceptible to human error and bias in the data collection and interpretation” (Cooper & Schindler, 2006, p. 196).

**Mixed-methods research.** Creswell and Plano Clark (2007) drew distinctions between research methodologies, research designs, and research methods. A research methodology represents the “philosophical framework and fundamental assumptions of

research” (Creswell & Plano Clark, 2007, p. 4). A research design is a process that “links the philosophical assumptions to specific methods” (Creswell & Plano Clark, 2007, p. 4). Examples of research designs include survey research, ethnography, and experimental research (Creswell & Plano Clark, 2007). Mixed methods is a research design (Creswell & Plano Clark, 2007). Research methods are “techniques of data collection and analysis” (Creswell & Plano Clark, 2007, p. 4). In employment of these terms, the exploratory Q-methodology study is a research study founded in mixed methodology that uses an exploratory design and a Q-method (Creswell & Plano Clark, 2007).

Mixed methodology might take one of several design forms. The first design would be to conduct a quantitative study and a qualitative study and merge the data sets from each study (Creswell & Plano Clark, 2007). The second design would be to embed one type of study into the other type with concurrent analysis conducted on both studies (Creswell & Plano Clark, 2007). The third design would involve connecting data analysis to data collection (Creswell & Plano Clark, 2007). After choosing the research design, the researcher may select a mixed research method. These methods include (a) triangulation, which is a research study involving concurrent, equally weighted qualitative and quantitative studies and merged data for interpretation and analysis (Creswell & Plano Clark, 2007); (b) embedding, which may be either a concurrent or a sequential research study unequally weighted to one type of study; (c) an explanatory study, which is conducted sequentially with the quantitative given more weight; and (d) the exploratory study, which is also conducted sequentially but the weight is given to the qualitative aspect of the research study (Creswell & Plano Clark, 2007).

## **Conclusion**

Asymmetrical warfare on a global scale, and the division of responsibilities among the U.S. Army's three components, have increased the importance of the role of the reserve components ("Department of the Army Field Manual (FM) 3-0," 2008). The target population for the exploratory Q-methodology study represents the U.S. Army's middle management. Retention of middle-grade officers with their experience and knowledge is critical to the Army's leaders development plan ("Department of the Army Field Manual (FM) 6-22," 2006).

The U.S. Army with its multiple management systems is an example of a complex organization (Salem, 2008). Integration of the middle-grade officer into the Army's personnel management system can be a challenge given the complexity of the organization and lack of literature on how to integrate the manager into the process (Salem, 2008). In consideration of the time and funds expended to develop an Army officer, the middle-grade officer represents a significant investment of national resources ("Department of the Army Field Manual (FM) 7-0," 2002).

In the current exploratory study, a mixed-methods approach offered the most choices of research methods. In the exploratory study, the subjects were asked to provide their motivations for making the decision to remain a member of the Army reserve components. A wide range of viable research options to examine decision-making processes employed within a modern organization were not readily available (Besio & Pronzini, 2011). Because the focus of the study was subjective, Q-methodology as a true mixed-methods research methodology represented the best choice of research options.

## Summary

The problem studied in the exploratory Q-methodology study was that, with the change from symmetrical to asymmetrical warfare conducted on a global level and the division of responsibilities between the U.S. Army's three components, retaining the U.S. Army's middle-grade officers in the reserve components is critical to an effective personnel management system ("Department of the Army Field Manual (FM) 100-11," 1998). The purpose of the exploratory Q-methodology study was to uncover the motivating influences that lead to the decision for a middle-grade officer to remain in the U.S. Army's reserve components and develop a deeper understanding of the subjective views of the participants.

The heritage of the citizen soldier, beginning with the early settlers in Jamestown and the Massachusetts Bay Colony, continues to the present through employing the U.S. Army reserve component forces in support of current military operations around the world. U.S. Army officer development is an established process managed by personnel assigned to function within the U.S. Army's personnel management system. The requirement for more middle-grade officers than junior-grade officers presents challenges to U.S. Army personnel managers. The knowledge gained from the current study might help to solve the problems presented by these challenges.

General systems theory, complexity theory, AI and POS, and decision theory comprised the theoretical framework for the exploratory Q-methodology study. General systems theory was used to establish a basis for the interaction of the subjects of the study with the larger system represented by the U.S. Army. To be effective as an organization, the U.S. Army must have properly trained personnel equipped for their assigned task.

Because it uses multiple management systems, the U.S. Army represents a complex system. Since the creation of the volunteer U.S. Army in the 1970s, service in the Army results from an individual's decision. Remaining as a member of an U.S. Army reserve component was the result of a decision made by the subjects of the current study.

Chapter 3 contains the research plan used for the exploratory Q-methodology study. The research plan contained details on the study methodology and design, as well as an explanation of the appropriateness for the methodology and design. Also included in the chapter are a description of the research population, Q-sort process, confidentiality and informed consent, data collection, instrumentation, and analysis process.

### **Chapter 3: Method**

In response to the recent shift in U.S. national military strategy from symmetrical to asymmetrical warfare, the U.S. Army transformed the role of the U.S. Army reserve components including the National Guard from a strategic force to an operational force (“Department of the Army Field Manual (FM) 3-0,” 2008). As an operational force, the U.S. Army Reserve and Army National Guard are now employed and deployed on a constant basis to support worldwide military operations (“Department of the Army Field Manual (FM) 3-0,” 2008). The new role has also produced a change in the mind-set of defense planners as all U.S. Army components are considered to be on active status.

Whereas U.S. Army planners once made a distinction between active-duty force and reserve force, the U.S. Army is now defined as either full-time or part-time (“Department of the Army Field Manual (FM) 3-0,” 2008). U.S. military planning no longer includes a reserve force only to be used in cases of national emergencies (“Department of the Army Field Manual (FM) 3-0,” 2008). Because U.S. Army planners now consider the U.S. Army as a single force, the staffing of the reserve components is more critical to accomplishing U.S. national military strategy (“Department of the Army Field Manual (FM) 3-0,” 2008). Understanding the factors that influence middle-grade officers to remain in the reserve component is critical for U.S. Army leaders to accomplish staffing objectives and the end-state goal of an operationally ready reserve component force (“Department of the Army Field Manual (FM) 3-0,” 2008).

As U.S. Army leaders seek to retain middle-grade officers, the focus continues to be on determining why officers chose to leave active status rather than determining what factors would have caused officers to remain on active status (Henning, 2006). The

purpose of the study was to provide U.S. Army leaders a better understanding of why middle-grade officers chose to remain in the U.S. Army. The target population for the study was captains and majors who had more than 7 years of commissioned military service and were over 30 years old. The use of a Q-methodology study provided an opportunity to discover the rationale used by middle-grade officers choosing to continue serving in the U.S. Army's reserve components and will provide U.S. Army leaders with insights on how to retain the critical U.S. Army asset (Henning, 2006).

The first research question was structured to allow respondents to express personal feelings on the motivating factors used in their decision process. The second research question was structured to allow respondents to express feelings for external support as part of the decision process. The two research questions for the exploratory Q-methodology study are as follows:

RQ1: What factors influenced the decision of captains and majors to remain serving as a member of the U.S. Army reserve component?

RQ2: What senior leader behaviors influenced the decision of captains and majors to remain serving as a member of the U.S. Army reserve component?

### **Research Method**

The research objective of exploring for influencing factors in the decision-making process for middle-grade U.S. Army officers who have chosen to remain serving in an U.S. Army reserve component might benefit from using a wide range of research methodologies, methods, and designs. To select the most appropriate methodology, method, and design is critical to answering research questions (Creswell, 2005). While the process of selecting an appropriate research methodology, method, and design, a

thorough review and evaluation of all applicable characteristics of quantitative, qualitative, and mixed-method research was conducted to assess the suitability for the study.

In the current study, quantitative methods such as a survey, an experiment, and a correlational analysis received consideration. The experiment and the survey were limited in scope based on the size of the total, potential study population. U.S. Army leaders use an annual census known as the End Date to determine the actual assigned strength for the U.S. Army. The U.S. Army's actual strength changes on a daily basis as individuals join and leave the service. Due to the constant change in assigned strength, the target population was unknown; thus, the outcomes of the study have limited applicability. A correlation analysis was a possibility, but because no data sets currently exist, a survey was necessary to establish the data needed for the analysis. Qualitative methods that received consideration included grounded theory and ethnography. Both methods provided the opportunity to gather subjective data from a smaller population (Creswell, 2005), but neither method offered the opportunity to analyze the data gathered during the research study.

The conclusion of the evaluation process resulted in selecting a mixed-methods approach because it allowed the incorporation of the strengths of both qualitative and quantitative methodologies in the overall research study (Creswell & Plano Clark, 2007). Selection of the true mixed-methods research methodology, Q-method, provided the opportunity to gather subjective data and perform statistical analysis of the gathered data. To defend the use of the mixed-methods methodology to reviewers, researchers must be

knowledgeable in both qualitative and quantitative research methodologies (Creswell & Plano Clark, 2007).

The research design is similar to a military operations order as it contains details of the process for collecting, measuring, and analyzing data. Creswell and Plano Clark (2007) presented four principal designs of mixed-methods research: triangulation, embedded, explanatory, and exploratory. The exploratory design was the superior design, as factors that influence the decision of the middle-grade officer were unknown prior to the research study. By using the exploratory mixed-methods design, researchers could integrate the subjective rationale used in the decision process and gain a richer understanding of participants' motivation.

### **Q-Methodology**

The primary focus of subjectivity in Q-methodology provides researchers a proven mixed-methods research design to explore the factors influencing the decision of a middle-grade officer to remain serving in a U.S. Army reserve component (Buchman, 2009). Q-methodology developed as a means for researchers to explore a diversity of subjective opinions and was founded in the factor analysis theory (Stephenson, 1953). The five steps of a Q-methodology study usually include (a) collecting the concourse, (b) developing the Q-sample, (c) identifying the P-sample, (d) performing the Q-sort, and (e) analyzing the data (S. R. Brown, 1993; McKeown & Thomas, 1988). Table 2 displays the research matrix for the exploratory study.

Table 2

*Research Matrix*

		Basic rationale					
		c	d	e	f	g	h
		Loyalty	Pride	Control	Commitment	Personal development	Pleasure
Motivation	a Internal	ac	ad	ae	af	ag	ah
	b External	bc	bd	be	bf	bg	bh

**Collecting the concourse.** The first phase of a Q-methodology study is collecting the concourse that will serve as the basis for any Q-methodology study (S. R. Brown, 1993; Stephenson, 1953). The concourse may be a collection of textual statements and opinions or nontextual material such as visual art forms or music related to the topic under investigation and to which the participants in the research study might respond (S. R. Brown, 1993; McKeown & Thomas, 1988; Stephenson, 1980) and will result in the Q-sample or data sorted by participants in the research study. The concourse provides a means for researchers to analyze the facts for significance to the research study and for relevance to the explanation of the elements in the research study (S. R. Brown, 1993). The concourse also provides researchers with the opportunity for theory assessment (Stephenson, 1953). The current exploratory study involved gathering statements from existing literature on the rationale for remaining in an organization (Gesme, Towle, & Wiseman, 2010; Gioia, 2008; Kaye & Jordan-Evans, 2008; Munsamy & Venter, 2009). From these statements, the Q-sample was developed and used during the Q-sort. Table 3 shows the Q-concourse factors and factor levels.

Table 3

*Q-Concourse Factors and Factor Levels*

Factors and levels	Items	<i>df</i>
Motivation	2	1
Internal		
External		
Basic rationale	6	5
Loyalty		
Pride		
Control		
Commitment		
Personal development		
Pleasure		

**Developing the Q-sample.** The Q-sample contains the statements used by the study participants during the Q-sort. The source for the Q-sample represents one of several optional combinations: naturalistic or ready-made, quasi-naturalistic or hybrid, and unstructured or structured. Naturalistic Q-samples represent statements made by the research study participants and ready-made Q-samples represent statements chosen by the researcher from relevant literature. The exploratory study involved using ready-made statements. Quasi-naturalistic and hybrid are two subcategories of naturalistic and ready-made Q-samples. Quasi-naturalistic Q-samples would be similar to those developed through participant interviews, but are developed from external sources. For the current research study, an example of a quasi-naturalistic Q-sample would be a statement made by an individual who had gone through the decision process but did not meet the screening criteria to participate in the study. The hybrid Q-sample would be one produced from both interviews and literature.

Unstructured or structured Q-samples are used to either select or exclude statements from the concourse (S. R. Brown, 1996; McKeown & Thomas, 1988). A

structured Q-sample approach would involve using statements intended to offset potential weaknesses that might exist in other statements, thus setting boundaries and providing focus for the study. Structuring Q-samples eliminates the “necessity [for the sample] to be exhaustive: any one sample is, in principle, as acceptable as any other, and it is always possible to put together additional samples for any given design, almost indefinitely” (Stephenson, 1953, p. 77). Fisher (1925) supported using a small sample with the contention that a larger sample produces no greater assurances of accuracy than does the small sample when the size of the population is unknown. Appendix A depicts the unstructured, ready-made Q-samples used in this study. Table 4 shows the frequency distribution for the Q-sample.

Table 4

*Frequency Distribution for Q-Sample*

Statement no.	Interactions
1, 2, 3	(3) ac = Internal x Loyalty
4, 5, 6	(3) ad = Internal x Pride
7, 8, 9	(3) ae = Internal x Control
10, 11, 12	(3) af = Internal x Commitment
13, 14, 15	(3) ag = Internal x Personal Development
16, 17, 18	(3) ah = Internal x Pleasure
19, 20, 21	(3) bc = External x Loyalty
22, 23, 24	(3) bd = External x Pride
25, 26, 27	(3) be = External x Control
28, 29, 30	(3) bf = External x Commitment
31, 32, 33	(3) bg = External x Personal Development
34, 35, 36	(3) bh = External x Pleasure

**Identifying the P-sample.** The third phase of Q-methodology involves selecting the P-sample or person sample. The P-sample was asked to arrange the sample of statements in their preferred order of importance during the Q-sort (S. R. Brown, 1993; McKeown & Thomas, 1988). For the study, the P-sample was middle-grade Army

officers who had chosen to continue serving as a member of a U.S. Army reserve component.

The use of Q-methodology offers the opportunity to explore the opinions of “individual[s] (or of small numbers of individuals) without sacrificing the power of statistical analysis” (Stephenson, 1953, p. 193). The application of small-sample theory and variance analysis served as the foundation for Q-methodology and required the researcher to sample a small number of participants to produce valid Q-sort results for analysis (Stephenson, 1953). Because Q-methodology allows researchers to focus on the variance between factors and not the individuals, the results of a Q-methodology research study may be generalized to specific factor types (S. R. Brown, 1980). Generalizing to specific factor types supports the irrelevance of the size of the P-sample to the outcome of the research study (S. R. Brown, 1999). For the exploratory Q-methodology study, the P-sample only needed to participate in the Q-sort a single time as the focus of the study was on a single event and not a progression of thought.

**Performing the Q-sort.** After developing the Q-sample from the concourse and identifying the P-sample from the selected population, the participants conducted the Q-sort. The Q-sort is the process used in Q-methodology to collect data for factoring (S. R. Brown, 1980). The Q-sort is the qualitative data collection aspect of the mixed-methods study. In performing the Q-sort, participants sort the statements developed in the Q-sample in either a free-sort or a forced-choice condition as an expression of the participants’ preferred order. The conduct of the Q-sort provides participants the opportunity to express their opinions and perceptions subjectively regarding the subject of the research study. As part of the Q-sort process, subjects rank ordered the statements

from those statements that were the greatest influence on the decision to remain serving in an Army reserve component to those statements that had the least or no influence on the decision. Placement of the statements during the Q-sort was determined by the study participants' individual decisions.

### **Appropriateness of Design**

Researchers have used Q-methodology to research influencing factors in the decision process that are either empirically or conceptually relate to the focus of their research studies (Block, 1961; S. R. Brown, 1986, 2003; Buchman, 2009; Donner, Krueger, Casey, Kirsch, & Maack, 2001; Webler, Danielson, & Tuler, 2009). As a true mixed-methods research design, Q-methodology provides researchers the ability to combine the in-depth subjectivity of a qualitative approach with factor analysis of a quantitative approach. The results of the combination of qualitative and quantitative research design are a deeper and richer understanding of the participants' motivations, values, and choices (S. R. Brown, 1980).

Criticism of Q-methodology results from the method's intrinsic strengths and focus on subjectivity, thereby producing a research design other researchers are unable to replicate. "Generalizations in Q, unlike those in surveys, are not best thought of in terms of sample and universe, but in terms of specimen and type" (S. R. Brown, 1980, p. 67). Fisher (1925) supported the small sample used in Q-methodology, as a large sample holds no proof of greater accuracy than does a small sample in the findings of a research study where the population is unknown or infinite. By reformulating factor analysis through an inversion of standard practices, Q-methodology incorporates Fisher's methods

“of small-sample theory and variance analysis to represent our theories and explanation of facts” (Stephenson, 1953, p. 2).

### **Study Population**

The study population as described by Cooper and Schindler (2006) represents the total number of participants that might potentially be included in a research study. The potential population for the current research study was unknown due to the constant changes in personnel created by mandatory promotions, end-of-contract status, and casualties of combat. Recognizing the challenge, U.S. Army leaders established an annual census taken September 30 of each year. The result of the census is called end-state (“Department of the Army Field Manual (FM) 100-11,” 1998). For reasons of national security, the actual number of the potential study population is classified; however, a sampling of Army authorization documents led to a belief that the study population might exceed 10,000. With the study population globally situated, cost and time make sampling the potential study population impractical (Cooper & Schindler, 2006). The study population for the exploratory Q-methodology study was represented by middle-grade officers willing to participate in the research study. Because Q-methodology results are generalizable to a specific set of factors and not to a general population (S. R. Brown, 1980), the sampling was appropriate for the research study.

### **Informed Consent**

Solicitation for participation in the Q-methodology study was accomplished by advertising for participants on available military association websites such as the Association of the U.S. Army. I had no direct contact prior to the participant accessing the website established for conducting the research study. Appendix B contains an

overview of the research study and provided the potential participants with a statement of potential risk associated with the study. Prior to accessing the survey questions, the potential participants were asked to verify they met the study eligibility criteria and understood the risks associated with participating in the study. If the participant agreed with the informed consent statement, as depicted in Appendix C, the participant was asked to print a copy of the Web page and return a signed copy to me as an e-mail attachment or by faxing a copy to my fax machine.

### **Confidentiality**

To ensure confidentiality, each survey was assigned a unique identifier linked only to the study. Each participant was the only individual with access to the computer-generated study code. Participant input remained on a Web server located in my home office. Access to the website occurred through the Web server's IP address to prevent random access by using a common search engine such as Google. According to Cooper and Schindler (2006), ensuring confidentiality increases the potential for participation. Results of the study might be published in journal articles or incorporated into presentations given to Army leaders. None of the information produced as a result of the study will identify individual participants.

### **Geographic Location**

Because Q-methodologists focus on factor variance and not individual variance (S. R. Brown, 1986), geographic location of the participants was not a factor in the exploratory Q-methodology study. The selection of a Web-distributed survey was influenced by the expected geographic dispersion of study participants (van Excel and de Graff, 2005). The focus of the study was determining influences on a decision made by

the participants; thus, current geographic location or the geographic location where the decision occurred were potentially different and not factors.

### **Data Collection**

**Test of survey instrument.** For the exploratory Q-methodology study, a field test of the Q-sample was not necessary. Participants in the study provided a subjective response to the statements presented to them in the Q-sample. Because the study was an exploratory study, the variance in the participants' response to the Q-sample was a factor considered during the analysis of the data collected.

**Data collection technique.** Data collection occurred following participants' response to an e-mail inquiry with an invitation to visit a website (<http://216.86.205.137>) established to collect data. The website registration process provided participants an opportunity to sign and return the informed consent form. Participants provided minimal demographic data related to their eligibility as a member of the target population and other general demographic data that may be used in future research studies. As the website administrator, I was able to validate the participants' eligibility prior to accepting the participants' input in the research study.

Participants only had access to their own data input form and were not able to see the input of any other participant. After making a statement of eligibility and agreeing to the informed consent statement, a standard Web survey form was used on which the participants performed the Q-sort. The form used to collect the participants' input was designed to replicate the Q-sort process. The computer coding of the concourse allowed for a predetermined, fixed number of responses for each response category. Participants

could have changed response categories if they so chose, but were encouraged to provide responses based on their first impulse.

### **Data Analysis**

Data analysis is the final phase of Q-methodology. Because researchers use Q-methodology to uncover subjective opinions and not to determine cause and effect (Sexton et al., 1998), data analysis typically involves “the sequential application of three sets of statistical procedures: correlation, factor analysis, and the computation of factor scores” (McKeown & Thomas, 1988, p. 46). Stephenson (1953) used factor analysis as a fundamental component of Q-methodology as it “comprises the statistical means by which participants are grouped or group themselves [through the process of Q-sorting]” (McKeown & Thomas, 1988, p. 49). The study included the PQ Method Version 2.3 software (Schmolck, 2002) to extract common factors provided by the participants during the Q-sort process. “The analysis of Q sorts is a purely technical, objective procedure—and is therefore sometimes referred to as the scientific base of Q” (van Excel & de Graaf, 2005, p. 8). The first step was to calculate the Q sorts and create a correlation matrix. The matrix displayed the range of viewpoints expressed by the study participants. Next I conducted a factor analysis “with the objective to identify the number of natural groupings of Q sorts by virtue of being similar or dissimilar to one another” (van Excel & de Graaf, 2005, p. 8).

I continued the analysis process by rotation, which might have been by either a standard statistical principle or a theoretical concern. Because the study was exploratory, the rotation was accomplished by a standard statistical principle. “Rotation does not affect the consistency in sentiment throughout individual Q sorts or the relationships

between Q sorts, it only shifts the perspective from which they are observed” (van Excel & de Graaf, 2005, p. 9). Calculating factor and difference scores was the final step of the analysis process. “Factor scores on a factor’s composite Q sort and difference scores point out the salient statements that deserve special attention in describing and interpreting that factor” (p. 10).

### **Summary**

Using Q-methodology, a true mixed-methods study resulted in subjective opinions analyzed for common factors. Applying Fisher’s (1925) methods of small-sample theory and variance analysis, Q-methodology only required a small number of participants to complete the Q-sort (S. R. Brown, 1993; Stephenson, 1953). Q-methodology is a true mixed-methods research design, as the in-depth subjectivity of a qualitative approach was combined with the factor analysis of the quantitative approach, providing me a richer and deeper understanding of the participants’ motivation, values, and choice.

## **Chapter 4: Results**

The purpose of the current Q-methodological study was to provide support for U.S. Army leaders, while responding to the recent shift in U.S. national military strategy from symmetrical to asymmetrical warfare, as they transformed the U.S. Army reserve components, including the National Guard, from a strategic force to an operational force (“Department of the Army Field Manual (FM) 3-0,” 2008). As an operational force, the U.S. Army Reserve and Army National Guard are now employed and deployed on a constant basis to support worldwide military operations (“Department of the Army Field Manual (FM) 3-0,” 2008). The new role has also produced a change in the mind-set of defense planners as all U.S. Army components are considered to be on active status.

### **Data Collection Procedures**

Data were collected on a Web server maintained in my office using a database program written for the study. Participants were solicited using an e-mail network of my military acquaintances and associates. Individuals known to me as potential participants received solicitations to participate by direct e-mail. Military support organizations such as the Association of the U.S. Army and the Reserve Officers Association forwarded an e-mail solicitation through the organizations’ distribution network. The director of the Reserve Officers Association Joint Officer Leadership and Development Program provided an e-mail address list of potential participants.

Potential participants received instructions to log onto my website using the IP address <http://216.86.205.137>. Data on each participant were captured and maintained as part of the database. A report was provided to me to monitor the status of the data collection. The report displayed the number of participants who had logged on to the

website and entered the required demographic information. The report also provided the number of participants who had completed the first step of the Q-sort and the number of participants who had completed the Q-sort.

At the conclusion of the data-gathering process, 47 participants had provided some elements of demographic data. Forty participants completed the first step of the Q-sort and 19 completed the Q-sort and became the basis for data analysis. The validity of a Q-methodological study is not dependent on the number of participants (Brown, 1980). Participants received no offers of compensation. Participants received two opportunities to enter an e-mail address, but none of the participants requested the results of the research project. After completing input to the demographic information, participants received a computer-generated code used to identify the study.

Should a participant have needed to leave the Q-sort, the study code provided a way of returning to wherever the participant had stopped. Participants were asked to print a copy of the informed consent form (see Appendix C), sign the form, and either fax to a number provided or scan and attach to an e-mail addressed to me. The survey took less than 1 hour to complete.

### **Demographic Information**

The database program written to collect the data for this research project required the participant to specify the Army rank and component to which they belonged before they were able to proceed with the study. Additional elements of demographic data were requested, with most participants providing the data (see Appendix D). Completing the additional demographic data portion was optional for the participants. Figures illustrating the demographic information are in Appendix D.

Eighty-nine percent of the participants were members of the Army Reserve and 11% were members of the National Guard. Sixty-eight percent of the participants held the rank of major and 32% were captains. Forty-two percent of the participants were male and 58% were female. Twenty-one percent of the participants were single and never married; 32% of the participants were single due to being divorced, separated, or widowed; and 47% of the participants were married. Nine participants self-identified as having children, of which two participants were identified as single.

To determine the geographic diversity of the study population, the world was divided into six geographic regions centering on locations where the United States might be present. These regions were the Northeastern United States, the Southeastern United States, Mid-America, the Northwestern United States including the states of Alaska and Hawaii, Southwestern United States, and outside U.S. boundaries. Three participants entered their residence in Mid-America. Northeastern United States and outside the U.S. boundaries each had four participants listed as their residence. Five participants entered their residence in Southeastern United States, and six participants entered their residence in Southwestern United States. No participants were identified as residing in the Northwestern United States.

Eighty-four percent of the participants ( $n = 16$ ) were over 35 years old. Two participants were between 31 and 35 years old and one participant was between 25 and 30 years old. Information was gathered on both the enlisted and the officer years of service for the participants. The enlisted service ranged between 1 and 9 years. The officer service ranged between 1 and 19 years of service. Only 12 of the 19 participants provided years of service information.

## Correlation Matrix

Study participants used a two-step process in the computer-designed data collection process. The participants first received a series of 36 statements with which they were to indicate agreement or disagreement by pressing on the appropriate button. Responses were required for each statement before the participant could proceed to the next two screens. The first screen was a list of all the statements the participant had indicated agreement. The second screen was a list of all the statements the participant had indicated disagreement. For both screens, the instructions were to rank order the statements from the strongest to the weakest. After participants completed the rank ordering, they submitted the input for inclusion in the research study.

This study comprised a 36-statement sample. The rank ordering produced responses of one to  $n$ , with  $n$  being the number of statements selected for the given category. For the agree screen, the rank-order numbers were as entered by the participant. For the disagree screen, because a number 1 would indicate the strongest disagreement, the ranking was inverted, with number 1 now equaling the number 36 for the survey. All data manipulations were designed as part of the database program with the output for me being a pure rank-ordered list.

Once complete, all data were input into the PQ Method 2.3 computer program (Schmolck, 2002), and a normal distribution score sheet in a range of -5 to +5 was specified as the desired output (see Appendix E). After the input of each participant's responses, the PQ Method program evaluated the input and provided feedback on the accuracy of the input. An error message was generated if a statement number was entered more than once or a statement number was missing. The validated result of the

forced sorting was that each Q-sort had an identical mean of 0 and an identical standard deviation of 2.449.

The next step in the statistical analysis process was correlating the results. The PQ Method computer program (Schmolck, 2002) provided a 19 x 19 matrix as one of its standard reports. This matrix indicated the various ways the participants felt the statements represented the influences on their decision to continue serving as a member of an Army Reserve component. The PQ Method computer program (Schmolck, 2002) then subjected the correlation matrix to a factor analysis to obtain groupings of variables.

### **Factor Analysis**

In Q-methodology, factors represent groupings of participants who share common viewpoints or opinions. The process of factor analysis indicated the number of factors to use in the discussion of the survey results and application. The PQ Method computer program (Schmolck, 2002) provided an accepted way of producing highly correlated sorts. Table 5 includes the results of the unrotated factors based on a matrix of eight factors. The matrix lists the factors based on a decreasing eigenvalue. Factor 1 had the highest eigenvalue of 4.1845, or 22% of the total variance, and Factor 8 had the lowest eigenvalue of 0.9291, or 5% of the total variance.

Any factor with an eigenvalue of 1 or greater is acceptable for analysis (Brown, 1993). Table 5 shows seven factors with an eigenvalue greater than 1. Watts and Stenner (2012) suggested for a study of 19 participants, factor analysis should be limited to four or five factors. Using an eigenvalue of 1.5, the number of factors is reduced to five. The five selected factors represented 59% of the factor variance, representing a significant part of the study (McKeown & Thomas, 1988).

Table 5

*Factors With Eigenvalues*

Sorts	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
1ID53	0.4458	-0.0753	0.2143	0.4272	0.3352	-0.0713	0.1149	-0.3798
2 ID55	0.5784	-0.3002	0.3831	0.0306	0.3032	0.1821	0.0569	0.0594
3 ID58	0.4197	-0.2512	-0.3441	-0.3653	-0.2362	0.1218	0.4724	-0.0707
4 ID60	0.2736	0.3031	0.3485	0.0071	-0.1772	-0.1991	0.2323	-0.3479
5 ID61	0.8002	-0.1843	-0.1341	0.0582	-0.1354	0.0367	0.1889	0.0949
6 ID63	0.4291	-0.1818	-0.1057	0.7435	0.1382	0.0404	0.0765	0.0611
7 ID67	0.0215	-0.0088	0.3751	-0.3713	0.4814	0.1498	0.0473	0.4167
8 ID69	-0.0650	0.4429	0.0776	-0.0070	0.6599	0.0616	0.3925	0.1778
9 ID70	0.5214	0.0754	-0.3104	-0.3931	0.3341	-0.4088	0.0347	-0.1831
10 ID72	0.5230	0.3460	-0.3124	-0.2022	0.1391	-0.2721	-0.4332	0.0659
11 ID73	0.1856	0.7639	-0.0611	0.3311	-0.0587	0.1453	0.1066	0.0996
12ID81	0.6916	-0.0494	0.0583	0.2181	-0.3397	-0.0933	-0.1108	0.3615
13 ID82	0.1654	-0.6392	0.1160	-0.0576	0.1264	0.4473	-0.2233	-0.1829
14 ID84	-0.4235	-0.2556	-0.5261	0.1171	-0.0891	0.0343	0.3114	0.3411
15 ID87	0.6284	-0.4017	-0.0442	-0.1927	0.1442	-0.2830	-0.0421	0.1301
16 ID89	0.3366	0.3001	-0.0146	-0.4133	-0.2100	0.4917	0.1817	-0.1913
17 ID91	0.2389	0.1648	0.6949	-0.1642	-0.3932	-0.0215	-0.0863	0.2157
18 ID92	0.3157	0.3046	-0.4104	0.0282	0.1939	0.5090	-0.3985	0.0354
19 ID95	0.8008	0.2119	-0.0847	0.0414	-0.1781	0.0927	0.0504	0.0872
Eigenvalues	4.1845	2.1156	1.7604	1.6181	1.5586	1.1841	1.0543	0.9291
% total variance explained	22	11	9	9	8	6	6	5

After the decision to use five factors, the next step in the analysis process was to rotate the factors. The varimax rotation feature of the PQ Method computer program (Schmolck, 2002) was used to produce the rotated factor matrix shown in Table 6. In the varimax rotation, all sorts are treated as equal. The viewpoints of some participants may hold greater significance in some studies and so must be considered. In the current study, all participants' viewpoints were considered equal. Varimax rotation is a process used to extract the association of each original variable with a small number of factors. To

achieve maximum statistical significance, each factor was hand flagged as part of the varimax rotation.

Table 6

*Rotated Factor Matrix*

Q-sort	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	0.0589	0.0823	0.1423	<b>0.6963</b>	0.1728
2	0.1700	<b>0.4844</b>	0.3397	<b>0.4938</b>	0.2038
3	<b>0.5329</b>	0.3335	-0.0182	-0.1385	-0.3635
4	0.0551	-0.1633	<b>0.5328</b>	0.0768	-0.0095
5	<b>0.5503</b>	0.2483	0.2155	<b>0.4276</b>	-0.3467
6	0.0338	-0.0411	-0.1319	<b>0.8616</b>	-0.1938
7	0.0343	0.2952	0.1980	-0.0959	<b>0.6116</b>
8	0.1069	-0.2907	-0.0521	0.1026	<b>0.7298</b>
9	<b>0.7500</b>	0.1631	-0.0352	0.0192	0.2221
10	<b>0.7103</b>	-0.1705	0.0779	0.068	0.0819
11	0.1950	<b>-0.7741</b>	0.2263	0.2127	0.0336
12	0.3127	0.0629	0.3976	<b>0.4323</b>	<b>-0.4477</b>
13	-0.0488	<b>0.6519</b>	-0.0684	0.1872	-0.0398
14	-0.1445	-0.0273	<b>-0.6507</b>	-0.1614	-0.2685
15	<b>0.4722</b>	<b>0.5549</b>	0.0960	0.2710	-0.0516
16	0.4526	-0.0716	0.3664	-0.2643	-0.0667
17	-0.1400	0.0589	<b>0.8430</b>	-0.0875	-0.0849
18	<b>0.5194</b>	-0.2749	-0.1566	0.1569	0.0693
19	<b>0.6166</b>	-0.0855	0.3917	0.3453	-0.2582
Number of defining sorts	7	4	3	5	3

*Note.* Significance loadings ( $p < .05$ ) are in boldface.

For the 36 statements, the standard error (SE) was  $1/\sqrt{36} = 0.167$ . To achieve a correlation coefficient of 99% ( $p < .01$ ), the result was  $2.58(0.167) = 0.43$ . To achieve a correlation coefficient of 95% ( $p < .05$ ), the result was  $1.645(0.167) = 0.27$ . Van Exel and de Graaf (2005) noted when a participant's factor loading exceeds  $p < .01$ , the factor becomes a defining variable. The difference score is the statistical significance given to the magnitude of the difference within any two factors for a statement's score (van Exel & de Graaf, 2005). A distinguishing statement results when the statement's score exceeds the difference score on any two factors. A consensus statement is a statement

not identified as a distinguishing statement. The study contained no consensus statements.

The five identified factors represented 59% of the study variance. The matrix in Table 7 displays the intercorrelation between the factors and demonstrates the relationship of each factor to the other factors in the study. The strongest correlation is between Factor 1 and Factor 4 (0.3558). Each factor contained a negative correlation with at least one other factor. The current study involved an attempt to identify influences on a decision. Although each factor could have been characterized with unique aspects, the factors were not mutually exclusive with more than one factor contributing to the final decision.

Table 7

*Correlation Between Factors*

Factor	1	2	3	4	5
1	1.0000	0.1432	0.0949	0.3558	-0.1105
2	0.1432	1.0000	-0.0251	0.1665	-0.1334
3	0.0949	-0.0251	1.0000	0.0338	-0.0563
4	0.3558	0.1665	0.0338	1.0000	-0.1804
5	-0.1105	-0.1334	-0.0563	-0.1804	1.0000

Evaluating the individual factors was the final step in the analysis process.

Distinguishing statements within each individual factor were analyzed to determine the theme or common thread within the factor. Discussion of each of the five factors follows.

**Factor 1: Personal dedication to service.** The principal characteristic for the ranking of the Q-sorts for Factor 1 was the participants' continued dedication to service in the Army (see Table 8). Of the seven participants identified with Factor 1, all were members of the Army Reserve. Six of the participants held the rank of major and one

was a captain. Four of the participants were female and three were male. Factor 1 represented 16% of the variance within the participants with one participant confounded with Factor 2 and one participant confounded with Factor 4.

Table 8

*Distinguishing Statements for Factor 1*

No.	Statements	Rank	Score
1	I decided to continue serving in an Army Reserve Component because I like being part of a team.	5	1.93*
18	I decided to continue serving in an Army Reserve Component because the work in the Army is exciting.	4	1.67*
2	I decided to continue serving in an Army Reserve Component because I am proud to serve my country.	4	1.52*
12	I decided to continue serving in an Army Reserve Component because I can continue to contribute to the military and my nation with my leadership skills and abilities.	3	1.43
28	My family encouraged me to remain in the military because there are good benefits.	-1	0.52*
25	My family encouraged me to remain in the Army because I received fair pay.	-5	2.24*

\*Significant at  $p < .01$ .

Statement 1 (I decided to continue serving in an Army reserve component because I like being part of a team) had a rank of +5, demonstrating personal commitment to continued service. Statement 18 (I decided to continue serving in an Army reserve component because the work in the Army's exciting), and Statement 2 (I decided to continue serving in an Army reserve component because I am proud to serve my country) both had a rank of +4 and appeared to indicate the participants' commitment to continued service. All three of these statements had a significance of  $p < .01$ .

Statement 12 (I decided to continue serving in an Army reserve component because I can continue to contribute to the military and my nation with my leadership skills and abilities) further illustrated the internal motivation characteristic of Factor 1. Statement 12 had a rank of +3. All these statements indicated the participants' personal

dedication to continued service. Statement 25 (My family encouraged me to remain in the Army because I received fair pay) with a rank of -5 and Statement 28 (My family encouraged me to remain in the military because there are good benefits) with a value of -1 illustrated that external motivation was not a part of Factor 1.

The positive and negative rankings illustrate the principal characteristics for this factor. The rankings and Q score values for this factor indicate a high level of internal motivation and dedication to service. Commonly accepted monetary benefits did not contribute to this factor. With the exception of Statement 12 all other statements had a significance of  $p < .01$ . Statements included in Factor 1 represent a range of +5 to -5 ranking.

**Factor 2: Professional advancement.** The principal characteristic for Factor 2 was the desire for professional advancement. Factor 2 accounted for 11% of the variance (see Table 9). The four participants in Factor 2 were all members of the Army Reserve. Three participants held the rank of major and one was a captain. Three participants were male and one was a female. One participant was confounded with Factor 1 and one participant was confounded with Factor 4.

Table 9

*Distinguishing Statements for Factor 2*

No.	Statements	Rank	Score
16	I decided to remain in the military because the Army provided me an opportunity to work with great people.	3	1.29*
15	I decided to continue serving in an Army reserve component because I can develop my creative leadership skills.	1	0.48
29	I decided to continue serving in an Army reserve component because I was inspired by my former and current Army leaders.	1	0.40*
19	My peers encouraged me to continue serving in an Army Reserve Component because I felt loyalty to the United States.	-4	-2.19
22	My decision to continue serving in an Army reserve component was affirmed by the support from my boss.	-5	-2.21*

\*Significant at  $p < .01$ .

The strongest statements for Factor 2 were the statements with the negative values. Statements for Factor 2 ranged from a rank 3 to a rank -5. Statement 22 (My decision to continue serving in an Army reserve component was affirmed by the support from my boss) with a rank of -5, and Statement 19 (My peers encouraged me to continue serving in an Army reserve component because I felt loyalty to the United States) with a rank of -4 demonstrated the respondents' desire to continue serving for personal reasons. Factor 2 might indicate more what the respondent is not than what the respondent is.

The positive statements for Factor 2, while not as strong as the negative statements, demonstrated a consistency in the respondent's perception. Statement 16 (I decided to remain in the military because the Army provided me an opportunity to work with great people) represented by a rank of +3 was the strongest positive characteristic of the person who loaded on Factor 2. While not as strong as the negative statements, the Statement 16 score did have a confidence factor of  $p < .01$ . Statements 15 (I decided to continue serving in an Army reserve component because I can develop my creative leadership skills) and Statement 29 (I decided to continue serving in an Army reserve component because I was inspired by my former and current Army leaders) both had a rank of 1.

Factor 2 was also characterized with a strong personal commitment to the participants' professional goals. Statement 29 illustrated the participants' inspiration to continue serving resulted from a respect for current and former Army leaders. Statement 22 indicated the participant's current leaders did not support the decision. The personal

commitment to continue serving as a member of an Army reserve component provided a common theme for Factor 2.

**Factor 3: Commitment to Army values.** The principal characteristic for Factor 3 was the participants' dedication and commitment to the Army values. Army values are defined using the acronym LDRSHIP (loyalty, duty, respect, selfless service, honor, integrity, and personal courage; Army Values, 2012). Factor 3 accounted for 12% of the variance and contained nine distinguishing statements. The three participants in Factor 3 were all members of the Army Reserve. Two participants held the rank of major and one participant was a captain. All three participants were men. Factor 3 was the only factor with no confounded participants.

Factor 3 had the greatest number of statements identified to demonstrate characteristics of the factor (see Table 10). The rank of the statements for Factor 3 ranged from +5 to -5. The distinguishing characteristic for Factor 3 was the participants' commitment to Army values. Statement 13 (I decided to remain in the military because the work challenged me) with a rank of 5 demonstrated the participants' willingness to accept challenging work. With the rank of 4, Statement 30 (My family encouraged me to continue serving in an Army reserve component because I'm committed to the goals of the Army) contributed to the Factor 3 focus on the participants' commitment to Army values and is continued in Statement 6 (I decided to continue serving in an Army reserve component because my Army leaders valued my abilities and supported my choice). Statement 6 had a ranking of +3.

Table 10

*Distinguishing Statements for Factor 3*

No.	Statements	Rank	Score
13	I decided to remain in the military because the work challenged me.	5	1.85*
30	My family encouraged me to continue serving in an Army Reserve Component because I am committed to the goals of the Army.	4	1.29*
6	I decided to continue serving in an Army reserve component because my Army leaders valued my abilities and supported my choice.	3	1.00
32	My family encouraged me to continue serving in an Army Reserve Component because I wanted to continue my military experience.	2	0.85
9	I decided to continue serving in an Army reserve component because military service adds value to my abilities and allows me to accomplish my personal goals.	2	0.78
26	My family encouraged me to continue serving in an Army Reserve Component instead of the Active Component because the work schedule offers me more choices of leisure activities.	0	0.07
18	I decided to continue serving in an Army Reserve Component because the work in the Army is exciting.	-3	-1.37*
16	I decided to remain in the military because the Army provided me an opportunity to work with great people.	-4	-1.46
8	I decided to continue serving in an Army Reserve Component instead of the Active Component because I have control over the location where I live.	-5	-2.37*

\*Significant at  $p < .01$

Statement 32 (My family encouraged me to continue serving in an Army reserve component because I wanted to continue my military experience) and Statement 9 (I decided to continue serving in an Army reserve component because military service adds value to my abilities and allows me to accomplish my personal goals) both had a rank of 2. Statement 26 (My family encouraged me to continue serving in an Army reserve component instead of the active component because the work schedule offers many more choices of leisure activities) with a rank of 0 represented a neutral influence for Factor 3.

Factor 3 had three statements with a negative ranking. Statement 18 (I decided to continue serving in an Army reserve component because the work in the Army is exciting), Statement 16 (I decided to remain in the military because the Army provided me an opportunity work with great people), and Statement 8 (I decided to continue

servicing in an Army reserve component instead of the active component because I can have control over the location where I live) further demonstrated the participants' commitment to Army values. Statement 18 ranked -3, Statement 16 ranked -4, and Statement 8 ranked -5.

**Factor 4: Satisfaction with Army culture.** The principal characteristic for Factor 4 was a satisfaction with Army culture. Factor 4 accounted for 12% of the variance. Of the five participants in Factor 4, three were members of the Army Reserve and two were members of the National Guard. Four of the participants held the rank of major and one was a captain. Four of the participants were female and one was male. Factor 4 had the most confounded participants, with one participant also in Factor 1, one participant in Factor 2, and one participant in Factor 4.

Although Factor 4 contained a statement ranked +5 and a statement ranked -5, the majority of the distinguishing statements are represented with positive values (see Table 11). Statement 34 (I decided to continue serving in an Army reserve component because I enjoyed the people I worked with in the Army) with a rank of +5 demonstrates a satisfaction with the Army culture. Statement 24 (I decided to continue serving in an Army reserve component because Army culture instills pride in me) with the rank of +4 and Statement 19 (My peers encouraged me to continue serving in an Army reserve component because I felt loyalty to the United States) with a rank of +3 further demonstrated the participants' satisfaction with the Army culture.

Table 11

*Distinguishing Statements for Factor 4*

No.	Statements	Rank	Score
34	I decided to continue serving in an Army Reserve Component because I enjoyed the people I worked with in the Army.	5	1.82*

24	I decided to continue serving in an Army Reserve Component because Army culture instills pride in me.	4	1.60*
19	My peers encouraged me to continue serving in an Army Reserve Component because I felt loyalty to the United States.	3	1.35
29	I decided to continue serving in an Army reserve component because I was inspired by my former and current Army leaders.	3	1.30
2	I decided to continue serving in an Army Reserve Component because I am proud to serve my country.	0	0.17
30	My family encouraged me to continue serving in an Army Reserve Component because I am committed to the goals of the Army.	-5	-1.89*

\*Significant at  $p < .01$ .

Statement 2 (I decided to continue serving in an Army reserve component because I am proud to serve my country) with a value of 0 was also considered a positive contributor with a  $z$  score of 0.17. Statement 30 (My family encouraged me to continue serving in an Army reserve component because I am committed to the goals of the Army) with the rank of -5 was the only negative statement included in Factor 4. Four of the statements in Factor 4 signified internal motivation was a significant part of the distinguishing statement.

**Factor 5: Family support of personal service.** The principal characteristic for Factor 5 is the participants' family support for personal service in the Army. Factor 5 accounted for 9% of the variance. Three participants were identified with Factor 5. Two of the participants were members of the Army reserve and one was a member of the National Guard. Two of the participants held the rank of major and one was a captain. All three participants were female. One participant was confounded with Factor 4.

The distinguishing statements in Factor 5 represented statements on the outside edges of the range from +5 to -5 (see Table 12). Statement 28 (My family encouraged me to remain in the military because there are good benefits) with the rank of +5 and a  $z$  score of 2.45 identified the key characteristic of family support. The confidence factor of Statement 28 was  $p < .01$ , which also added to the strength of this statement.

Table 12

*Distinguishing Statements for Factor 5*

No.	Statements	Rank	Score
28	My family encouraged me to remain in the military because there are good benefits.	5	2.45*
6	I decided to continue serving in an Army reserve component because my Army leaders valued my abilities and supported my choice.	4	1.79
4	I decided to remain in the military because I take pride in what I can accomplish as a military service member.	4	1.76*
3	I decided to continue serving in an Army Reserve Component because I enjoy the common bond of service to the United States.	-3	-0.95
11	I decided to continue serving in an Army Reserve Component because I believe in the Army values.	-5	-1.72*

\*Significant at  $p < .01$ .

Statement 6 (I decided to continue serving in an Army reserve component because my Army leaders valued my abilities and supported my choice) and Statement 4 (I decided to remain in the military because I take pride in what I can accomplish as a military service member), both with a rank of +4, also signified personal service. Statement 3 (I decided to continue serving in an Army reserve component because I enjoy the common bond of service to the United States) with a rank of -3 and Statement 11 (I decided to continue serving in an Army reserve component because I believe in the Army values) with a rank of -5 illustrated the importance of family support for Factor 5. The contrast of family support in Statement 28 and belief in the Army values in Statement 11 provide illustrations for the extremes in the distinguishing statements of Factor 5.

### **Summary**

The current study involved using Q-methodology to find potential influences on the decision of U.S. Army middle-grade officers (captain and major) to continue serving as a member of an Army reserve component. Seven factors emerged as potential

influences, but based on Q-method guidelines, the number for analysis was reduced to five. All five factors had an eigenvalue greater than 1.5. Results of the study might become the basis for future studies regarding the influences on the decision process to remain a member of an organization.

Chapter 4 included an examination of the statistics generated using the PQ Method computer program (Schmolck, 2002). Input from 19 participants who ranked 36 statements provided the basis for the statistical analysis. Application of Q-methodology provided a method for the statistical analysis of the influences on the decision process of the study participants. Chapter 5 contains further explanation and discussion of the findings discovered during the data analysis.

## **Chapter 5: Conclusions and Recommendations**

Middle-grade officers form the basis for the U.S. Army's middle management and represent a significant investment of national resources in their training and development. The focus of the study was on which factors caused members of the group to continue serving in the Army Reserve or Army National Guard. Officers within the target population reached a decision point in their career where initial service obligations were complete and they made the decision to remain in the service. The choice to remain in the service required negotiating a new contract and a commitment to remain serving in the military until the officer is eligible for retirement.

The purpose of the Q-methodology study was to determine factors that influenced middle-grade officers to continue serving in the U.S. Army. As the factors were largely unknown, the study included the use of an exploratory design and standard Q-method practices. During the Q-sort process, the participants arranged 36 statements I provided in a rank order from most influential to least influential upon their decision to remain serving in a U.S. Army reserve component. Research participants included any captain or major currently serving in an Army reserve component, Army Reserve or National Guard. Chapter 5 includes (a) factor interpretations, (b) effects of limitations and delimitations, (c) significance of research to leadership, (d) recommendations for future research, and (e) a summary of the study.

### **Findings and Interpretations**

**Summary of findings.** Within the construct of the Q-methodology study, and as discussed in Chapter 4, factors represented the collective opinion of a group of participants who performed a Q-sort and had similar patterns in their responses. The

responses may be subjective, but the factors are grounded in concrete behaviors. Results of Q-methodology studies are based on patterns identified in the Q-sorts (Watts & Stenner, 2012).

The five factors identified for the study were based on each participant's opinion on the influences on his or her decision to continue serving as a member of a U.S. Army reserve component and derived from responses to the Q-sort. The five factors are as follows: (a) personal dedication to service, (b) professional advancement, (c) commitment to Army values, (d) satisfaction with Army culture, and (e) family support of personal service. Although each factor contains unique characteristics, it is not mutually exclusive because the factor represents an influence on a decision. A participant could be identified with more than one factor.

Two research questions were developed for the study as the framework for the statements contained in the Q-sort. The research questions were as follows:

RQ1: What factors influenced the decision of captains and majors to remain serving as a member of the U.S. Army reserve component?

RQ2: What senior leader behaviors influenced the decision of captains and majors to remain serving as a member of the U.S. Army reserve component?

Discussion of the research questions follows.

**Research Question 1.** Factors developed as a result of the participants' Q-sort focus on answering Research Question 1 included Factor 1, Factor 3, and Factor 5 and represented 39% of the study variance. Most of the distinguishing statements related to an internal motivation as the principal influence on the decision process. Statement 1(I decided to continue serving in an Army Reserve Component because I like being part of

a team) was ranked with a number +5 for Factor 1. Statement 2 (I decided to continue serving in an Army reserve component because I am proud to serve my country) was ranked as a +4 for Factor 1. Factor 1 represented 16% of the variance with the greatest number of participants ( $n = 7$ ) identified with Factor 1.

Factor 3 (commitment to Army values) and Factor 5 (family support of personal service) also supported internal motivation. In Factor 3 Statement 13(I decided to remain in the military because the work challenged me) with a ranking of +5 and Factor 5 Statement 4 (I decided to remain in the military because I take pride in what I can accomplish as a military service member) with a ranking of +4 further substantiated the internal nature of the influences on the decision process. Factor 3 and Factor 5 represented a collective 17% of the participant study variance. Factors 1, 2, and 4 identified both male and female participants. Factor 3 identified only male participants, and Factor 5 identified only female participants.

**Research Question 2.** Factors developed as a result of the participants' Q-sort focus on answering Research Question 2 included Factor 2 and Factor 4 and represented 20% of the study variance. Within Factor 2 Statement 22 (My decision to continue serving in an Army reserve component was affirmed by the support from my boss) with a ranking of -5 and Statement 19 (My peers encouraged me to continue serving in an Army Reserve Component because I felt loyalty to the United States) with a ranking of -4 indicated senior leader behaviors had no influence on the participants' decision.

A positive influence was illustrated in Factor 4 Statement 29 (I decided to continue serving in an Army reserve component because I was inspired by my former and current Army leaders) with a ranking of +3. Factor 4 was related to the Army culture.

Statement 34 (I decided to continue serving in an Army Reserve Component because I enjoyed the people I worked with in the Army) illustrates a satisfaction with the participant's relationship with senior leaders. Statements included in the factors relating to Research Question 2 represented both positive and negative influences on the participants' decision process.

### **Effects of Limitations and Delimitations**

The available population of Army reserve component officers choosing to respond to the request bound the scope of the study. The scope of the study was delimited by the use of Q-methodology, which allowed for a small population. Because the focus was on the positive action of choosing to remain serving in a U.S. Army reserve component, the participants were expected to participate in the Q-sort process without any fear of negative consequences. The study was designed to accept participants in a random procedure and not reflect actual Army personnel demographics.

Use of a Web-based data gathering tool is acceptable when the study population is greatly dispersed (van Excel & de Graaf, 2005). Because the participants were expected to reside in geographically dispersed areas, a Web-based data-gathering tool was designed for the study. The database program was designed to replicate the Q-sort process as closely as possible. In the first step in the process, the participant sorted 36 statements into agree and disagree piles. Then the participants were given each pile to rank order based on the influence the statement represented on their decision. After the participant completed the rank order step, the information was transferred into a data analysis program developed for Q-method studies.

All communications with the exception of messages sent to Facebook friends and to the addresses provided by the Reserve Officers Association were forwarded through friends and associates of the researcher. Although I did receive direct e-mail responses from four potential participants, the demographic data provided by the participants was insufficient to identify and validate participation in the study. All participants remain unknown to me. The minimum number of participants for a 36-statement Q-sort is 17 ( $(36/2) - 1$ ; Brown, 1993). Because of the indirect nature of the communication with study participants that resulted from a lack of official Department of Defense status for the study, the data collection process required a longer time to gather sufficient input for a valid analysis than I originally anticipated. The total number of participants for the study was 19.

### **Significance of Research to Leadership**

Internal motivation was a continuing thread through the factors of the Q-methodology study. The results of the study are consistent with the body of research on leadership and information in Army publications (Army Leadership, 2002; Baldoni, 2010; Benson, 2008; Campbell & Dardis, 2004; Hoffman, 2008; Toor & Ofori, 2008). Leaders establish an organization's culture. Satisfaction with the Army culture was one of the identified factors for the current study.

When Army leaders develop incentive programs, they usually think in terms of benefits or perks ("Benefits Draw Top Talent," 2008): however, results from the current study indicated the internal values of loyalty and patriotism might have a greater influence on the decision to continue serving as a member of an Army reserve component. The focus of the study design and research questions was behaviors and not the influence

of incentives on the individual's decision-making process. Factor 5 indicated family stability was an important influence on the decision, especially for the female participants. Although Factors 3 and 5 identified the fewest number of participants, they also represented factors uniquely male and female. Male participants appeared to identify with Army Values, and female participants appeared to identify with family values.

The study identified five factors that influence a middle-grade officer to continue serving as a member of an Army reserve component. To encourage continued service, Army leaders must be aware of these factors. Understanding what influences the decision to continue serving as a member of an Army reserve component will aid Army leaders in solving the problem of the current shortage of middle-grade officers.

### **Recommendations for Future Research**

A distinguishing statement for Factor 1 that could be worthy of further research is Statement 1 (I decided to continue serving in an Army Reserve Component because I like being part of a team). With a rank of +5 in Factor 1, which represented 22% of the study variance, Statement 1 could represent the greatest influence on the decision to continue serving as a member of an Army reserve component. Because of the requirements for adequate staffing represented by the study population, understanding what factors influence the decision process is a necessary component for an officer retention plan. This factor was supported by distinguishing Statement 2 (I decided to continue serving in an Army Reserve Component because I am proud to serve my country) and Statement 18 (I decided to continue serving in an Army Reserve Component because the work in the

Army is exciting). Future research on this factor would add to the body of knowledge regarding the relationship between continued service and workplace satisfaction.

Another area for future research is the influence of senior leaders. Factor 2 Statement 22 (My decision to continue serving in an Army reserve component was affirmed by the support from my boss), Factor 3 Statement 6 (I decided to continue serving in an Army reserve component because my Army leaders valued my abilities and supported my choice), and to a lesser degree Factor 2 Statement 29 (I decided to continue serving in an Army reserve component because I was inspired by my former and current Army leaders) appear to contradict each other. From these factors, it would appear the behaviors of senior officers inspire the decision, while direct contact discourages the decision. Future research might resolve this apparent conflict of opinions.

Of the demographic data gathered, the distinctions between male and female responses might be another area for future research. Of significance in this study was that Factor 3 participants were exclusively male and Factor 5 participants were exclusively female. From the results, a conclusion might be drawn that men tend to be motivated by an internal commitment to Army values and women tend to be motivated by family support for the decision to continue serving as a member of an Army reserve component. Further research could validate the importance of these factors to their related gender and the Army culture.

### **Summary**

As Army leaders attempt to solve the continuing shortage of middle-grade officers in the reserve components, the findings of the current study might provide some answers regarding which factors influence the decision process. Army leaders establish

the Army culture in a top-down fashion. Because of the geographic diversity of the Army reserve components, many local variations of the Army culture might exist. Leaders demonstrating the Army values might help to standardize the Army culture.

The five factors that emerged from the Q-methodology study supported internal motivation as the principal factor in motivating the participants to continue serving as a member of an Army reserve component. Three factors focused on the internal influences on the decision process, and two factors focused on the influence of senior leader behaviors. Because the exploratory study was oriented toward factors that produce a decision to continue to serve as a member of an Army reserve component, the results can form the basis for more in-depth studies of the variances discovered during the research study.

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Wilby, J. (2006). An essay on Kenneth E. Boulding's general systems theory: The skeleton of science. *Systems Research & Behavioral Science*, 23, 695-699.  
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Wilke, A., & Todd, P. M. (2010). Past and present environments: The evolution of decision making. *Psicothema*, 22, 4-8.

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## Appendix A: Selected Q-Sample From Concourse

ac = Internal x Loyalty

1. I decided to continue serving in an Army Reserve Component because I like being part of a team.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7, 187-195. doi:10.4102/sajhrm.v7i1.198

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

2. I decided to continue serving in an Army Reserve Component because I am proud to serve my country.

Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

Williams, M. L., Brower, H. H., Ford, L. R., Williams, L. J., & Carraher, S. M. (2008). A comprehensive model and measure of compensation satisfaction. *Journal of Occupational & Organizational Psychology*, 81(4), 639-668.

3. I decided to continue serving in an Army Reserve Component because I enjoy the common bond of service to the United States.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

ad = Internal x Pride

4. I decided to remain in the military because I take pride in what I can accomplish as a military service member.

Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

5. I decided to continue in the Army because I am proud to be a member of the military.

- Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.
- Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7, 187-195. doi:10.4102/sajhrm.v7i1.198

6. I decided to continue serving in an Army reserve component because my Army leaders valued my abilities and supported my choice.

- Charness, G., & Villeval, M.-C. (2009). Cooperation and competition in intergenerational experiments in the field and the laboratory. *American Economic Review*, 99(3), 956-978. doi: 10.1257/aer.99.3.956
- Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

ae = Internal x Control

7. I decided to continue serving in an Army Reserve Component because I have more control over my leisure time.

- Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.
- Kittinger, J. D., Walker, A. G., Cope, J. G., & Wuensch, K. L. (2009). The relationship between core self-evaluations and affective commitment. *Journal of Behavioral & Applied Management*, 11(1), 68-92.

8. I decided to continue serving in an Army Reserve Component instead of the Active Component because I have control over the location where I live.

- Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.
- Kittinger, J. D., Walker, A. G., Cope, J. G., & Wuensch, K. L. (2009). The relationship between core self-evaluations and affective commitment. *Journal of Behavioral & Applied Management*, 11(1), 68-92.

9. I decided to continue serving in an Army reserve component because military service adds value to my abilities and allows me to accomplish my personal goals.

Gesme, D. H., Towle, E. L., & Wiseman, M. (2010). Essentials of staff development and why you should care. *Journal of Oncology Practice*, 6(2), 104-106. doi: 10.1200/jop.091089

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

af = Internal x Commitment

10. I decided to continue serving in an Army reserve component because I am dedicated to serving our country.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7(1), 187-195. doi: 10.4102/sajhrm.v7i1.198

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

11. I decided to continue serving in an Army Reserve Component because I believe in the Army values.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

12. I decided to continue serving in an Army reserve component because I can continue to contribute to the military and my nation with my leadership skills and abilities.

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or lose 'em: Getting good people to stay* (4th ed.). San Francisco, CA: Berrett-Koehler.

Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7(1), 187-195. doi: 10.4102/sajhrm.v7i1.198

ag = Internal x Personal Development

13. I decided to remain in the military because the work challenged me.

- Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164
- Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

14. I decided to remain in the military because the Army provided me an opportunity for career growth.

- Gesme, D. H., Towle, E. L., & Wiseman, M. (2010). Essentials of staff development and why you should care. *Journal of Oncology Practice*, 6(2), 104-106. doi: 10.1200/jop.091089
- Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.
- Honore, J. (2009). Employee motivation. *Consortium Journal of Hospitality & Tourism*, 14(1), 63-75.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

15. I decided to continue serving in an Army reserve component because I can develop my creative leadership skills.

- Gesme, D. H., Towle, E. L., & Wiseman, M. (2010). Essentials of staff development and why you should care. *Journal of Oncology Practice*, 6(2), 104-106. doi: 10.1200/jop.091089
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7(1), 187-195. doi: 10.4102/sajhrm.v7i1.198

ah = Internal x Pleasure

16. I decided to remain in the military because the Army provided me an opportunity to work with great people.

- Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.
- Honore, J. (2009). Employee motivation. *Consortium Journal of Hospitality & Tourism*, 14(1), 63-75.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

17. I decided to continue serving in an Army Reserve Component because I enjoy learning new things.

Gesme, D. H., Towle, E. L., & Wiseman, M. (2010). Essentials of staff development and why you should care. *Journal of Oncology Practice*, 6(2), 104-106. doi: 10.1200/jop.091089

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7(1), 187-195. doi: 10.4102/sajhrm.v7i1.198

18. I decided to continue serving in an Army Reserve Component because the work in the Army is exciting.

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

bc = External x Loyalty

19. My peers encouraged me to continue serving in an Army Reserve Component because I felt loyalty to the United States.

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

20. My peers encouraged me to continue serving in an Army Reserve Component because an Army career allows me to express my freedom.

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Honore, J. (2009). Employee motivation. *Consortium Journal of Hospitality & Tourism*, 14(1), 63-75.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

21. I decided to remain in the military because my peers respected me as a member of the Army.

- Honore, J. (2009). Employee motivation. *Consortium Journal of Hospitality & Tourism*, 14(1), 63-75.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

bd = External x Pride

22. My decision to continue serving in an Army reserve component was affirmed by the support from my boss.

- Charness, G., & Villeval, M.-C. (2009). Cooperation and competition in intergenerational experiments in the field and the laboratory. *American Economic Review*, 99(3), 956-978. doi: 10.1257/aer.99.3.956
- Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

23. I decided to continue serving in an Army Reserve Component because I am proud to wear the Army uniform.

- Honore, J. (2009). Employee motivation. *Consortium Journal of Hospitality & Tourism*, 14(1), 63-75.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Williams, M. L., Brower, H. H., Ford, L. R., Williams, L. J., & Carraher, S. M. (2008). A comprehensive model and measure of compensation satisfaction. *Journal of Occupational & Organizational Psychology*, 81(4), 639-668.

24. I decided to continue serving in an Army Reserve Component because Army culture instills pride in me.

- Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

be = External x Control

25. My family encouraged me to remain in the Army because I received fair pay.

- Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Motivated Employees. (2009). *Journal of Accountancy*, 207(1), 21-21.

26. My family encouraged me to continue serving in an Army Reserve Component instead of the Active Component because the work schedule offers me more choices of leisure activities.

- Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Kittinger, J. D., Walker, A. G., Cope, J. G., & Wuensch, K. L. (2009). The relationship between core self-evaluations and affective commitment. *Journal of Behavioral & Applied Management*, 11(1), 68-92.

27. My family encouraged me to continue serving in an Army Reserve Component because they liked the job security the Army provides.

- Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164
- Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

bf = External x Commitment

28. My family encouraged me to remain in the military because there are good benefits.

- Clark, A. D. (2007). The new reality: Using benefits to attract and retain talent. *Employment Relations Today (Wiley)*, 34(3), 47-53. doi: 10.1002/ert.20164
- Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Motivated Employees. (2009). *Journal of Accountancy*, 207(1), 21-21.

29. I decided to continue serving in an Army reserve component because I was inspired by my former and current Army leaders.

- Charness, G., & Villeval, M.-C. (2009). Cooperation and competition in intergenerational experiments in the field and the laboratory. *American Economic Review*, 99(3), 956-978. doi: 10.1257/aer.99.3.956

Honore, J. (2009). Employee motivation. *Consortium Journal of Hospitality & Tourism*, 14(1), 63-75.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

30. My family encouraged me to continue serving in an Army Reserve Component because I am committed to the goals of the Army.

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

bg = External x Personal Development

31. My family encouraged me to continue serving in an Army Reserve Component because I like being responsible for something.

Gesme, D. H., Towle, E. L., & Wiseman, M. (2010). Essentials of staff development and why you should care. *Journal of Oncology Practice*, 6(2), 104-106. doi: 10.1200/jop.091089

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

32. My family encouraged me to continue serving in an Army Reserve Component because I wanted to continue my military experience.

Gesme, D. H., Towle, E. L., & Wiseman, M. (2010). Essentials of staff development and why you should care. *Journal of Oncology Practice*, 6(2), 104-106. doi: 10.1200/jop.091089

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7(1), 187-195. doi: 10.4102/sajhrm.v7i1.198

33. I decided to continue serving in an Army reserve component because the Army gives me an added dimension to my personal development.

Honore, J. (2009). Employee motivation. *Consortium Journal of Hospitality & Tourism*, 14(1), 63-75.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

bh = External x Pleasure

34. I decided to continue serving in an Army Reserve Component because I enjoyed the people I worked with in the Army.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

Munsamy, M., & Venter, A. B. (2009). Retention factors of management staff in the maintenance phase of their careers in local government. *South African Journal of Human Resource Management*, 7(1), 187-195. doi: 10.4102/sajhrm.v7i1.198

van de Ven, F. (2007). Fulfilling the promise of career development: Getting to the "Heart" of the matter. *Organization Development Journal*, 25(3), P45-P50.

35. I decided to continue serving in an Army reserve component because my military experience helps me stand out from my civilian peers and allows me to be recognized for being special.

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Jamrog, J. (2004). The perfect storm: The future of retention and engagement. *Human Resource Planning*, 27(3), 26-33.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

36. I decided to continue serving in an Army Reserve Component because I like doing different jobs.

Gesme, D. H., Towle, E. L., & Wiseman, M. (2010). Essentials of staff development and why you should care. *Journal of Oncology Practice*, 6(2), 104-106. doi: 10.1200/jop.091089

Gummer, B. (2002). Finding and retaining employees: The best versus the best suited. *Administration in Social Work*, 26(2), 83-102.

Kaye, B., & Jordan-Evans, S. (2008). *Love 'em or Lose 'em: Getting Good People to Stay* (4th ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

## **Appendix B: Communication With Participants**

The following statements will be presented to potential study participants when they access the data collection website established for the study:

### **Introduction:**

As a current member of the Army Reserve or Army National Guard having transferred from Active Duty within the past 24 months, you play a vital role in our nation's defense. To gain a better understanding of the influences which cause you to make the decision to continue serving as a member of an Army reserve component, you are invited to participate in a research study entitled Army Officers' Choices to Continue Serving in an Army Reserve Component: A Q-Methodology Study.

The principal investigator for the study is Milton D. Houghton, a Management in Organizational Leadership doctoral student at the University of Phoenix.

### **Background Information:**

The purpose of the study, a dissertation project of the investigator, is to determine what internal and external factors influence the decision process for making a decision to continue serving as a member of an Army reserve component.

### **Procedures:**

If you agree to participate in the study, I would ask you to commit approximately one hour to do the following:

1. Read through each of the 36 statements (one at a time) regarding influences on your decision to become a member of an Army reserve component and indicate whether you agree or disagree.
2. Next you will be shown a screen with all the statements to which you agreed. Rank them from one to the number of your choices (One indicates strong agreement).
3. Finally you will be shown a screen with all the statements with which you disagreed. Rank them from one to the number of your choices (One indicates strong disagreement).

### **Duration:**

The study will end on or before April 14, 2013.

### **Risks and Benefits in the Study:**

There are no known risks associated with the project that are greater than those ordinarily encountered in daily life. You are not expected to benefit directly from participating in the study. However, your participation may aid Army leaders to achieve a greater understanding of the factors which motivate Army officers to continue serving voluntarily as a member of the reserve components.

### **Confidentiality:**

Your responses to the study will be confidential. Only information necessary to determine your eligibility to participate in the study and general demographic information will be requested for your participation in the study. Knowledge gained from the study

may be published in scientific journals or used in presentations. None of the information will identify you personally.

**Study Cost:**

There is no cost for participation in the study.

**Voluntary Nature of Study:**

Participation in the study is voluntary and you may withdraw from participation in the study without explanation and without penalty of any kind. Your decision whether or not to participate will not affect your current or future relations with the University of Phoenix or the US Army.

**Contact and Questions:**

If you have any questions regarding the study or would like to request more information, you are encouraged to contact Milton Houghton by email at either [docnmmx@email.phoenix.edu](mailto:docnmmx@email.phoenix.edu) or [milton.houghton@us.army.mil](mailto:milton.houghton@us.army.mil), or by phone at 562-596-5078.

## Appendix C: Informed Consent

### Statement of Consent:

Dear Survey Participant,

My name is Milton Houghton and I am a student at the University of Phoenix working on a Doctor of Management in Organizational Leadership degree. I am conducting a research study entitled “Army Officer’s’ Choices to Continue Serving in an Army Reserve Component: A Q-Methodology Study.” The purpose of the research study is to establish a baseline understanding of factors that influence an Army officer to continue serving in an Army Reserve Component after completion of that officer’s initial statutory obligation.

Your participation will involve about one hour of your time to complete a survey. The survey consists of 36 statements regarding factors which may have influenced your decision to continue serving in an Army Reserve Component. You will be asked to rank order these statements from the most influential to the least influential. Additionally you will be asked to provide some very general demographic information that may aid in the conduct of follow-up research.

In the research, there are no foreseeable risks to you.

Although there may be no direct benefit to you, a possible benefit of your participation will be providing the Army Reserve Components a better understanding of why officers choose to continue serving in the Army Reserve Components after they have completed their initial statutory obligation.

If you have any questions concerning the research, please call me at 1-562-596-5078 or email me at [milton.houghton@us.army.mil](mailto:milton.houghton@us.army.mil).

As a participant in the study, you should understand the following:

1. You may decline to participate or withdraw from participation at any time without consequences.
2. Your identity will be kept confidential.
3. Milton Houghton, the researcher, has thoroughly explained the parameters of the research study and all of your questions and concerns have been addressed.
4. While not applicable to the research study, if the interviews are recorded, you must grant permission for the researcher, Milton Houghton, to digitally record the interview. You understand that the information from the recorded

interviews may be transcribed. The researcher will structure a coding process to assure that anonymity of your name is protected.

5. Data will be stored in a secure and locked area. The data will be help for a period of three years and then destroyed.

6. The research results will be used for publication.

“By signing the form you acknowledge that you understand the nature of the study, the potential risks to you as a participant, and the means by which you identity will be kept confidential. Your signature on the form also indicates that you are 18 years old or older and that you give your permission to voluntarily serve as a participant in the study described.”

Signature of the interviewee/participant \_\_\_\_\_

Date \_\_\_\_\_

Signature of the researcher \_\_\_\_\_

Date \_\_\_\_\_

### Appendix D: Demographic Information

Table D1

#### Demographic Data Chart

RESID	Army Reserve Component	Rank	Gender	Age	Marital Status	Dependent Children	Residence Location	Years of Service
53	NG	CPT	M	35+	Married	Yes	5	NA
55	AR	MAJ	F	35+	Married	No	6	NA
58	AR	MAJ	M	35+	SNM	No	3	NA
60	AR	MAJ	M	35+	Married	Yes	5	O14
61	AR	MAJ	F	35+	SNM	No	1	O14 E9
63	AR	MAJ	F	35+	SDSW	No	1	NA
67	AR	MAJ	F	35+	Married	Yes	2	O5
69	AR	CPT	F	35+	SNM	No	2	NA
70	AR	MAJ	F	31-35	SDSW	No	1	O10 E5
72	AR	MAJ	M	31-35	Married	Yes	5	O9
73	AR	CPT	M	35+	Married	Yes	2	O5
81	NG	MAJ	F	35+	SDSW	No	5	O1
82	AR	CPT	F	35+	Married	Yes	3	NA
84	AR	CPT	M	35+	SNM	No	5	O11 E9
87	AR	MAJ	M	35+	SDSW	Yes	3	O19
89	AR	MAJ	F	35+	Married	No	1	O15 E1
91	AR	MAJ	M	35+	Married	Yes	2	O9
92	AR	CPT	F	25-30	SDSW	Yes	2	O4
95	AR	MAJ	F	35+	SDSW	No	5	O12

*Note.* RESID = Respondent Identification Code. Marital Status: SNM = Single Never Married, SDSW = Single Divorced/Separated/Widowed. Location of Residence: 1 = Northeastern United States, 2 = Southeastern United States, 3 = Mid-America, 4 = Northwestern United States including Alaska and Hawaii, 5 = Southwestern United States, 6 = Outside Boundaries of 50 United States. Years of Service: NA = Not Answered. O# = Years of commissioned service as officer, E# = Years of service as enlisted member.

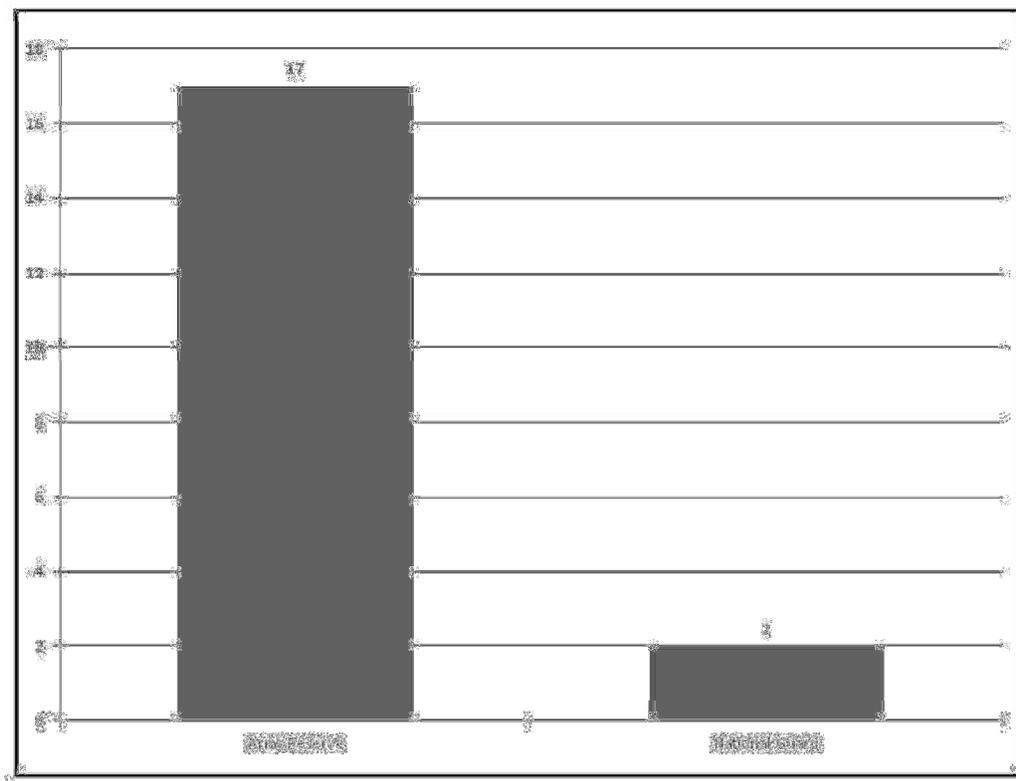
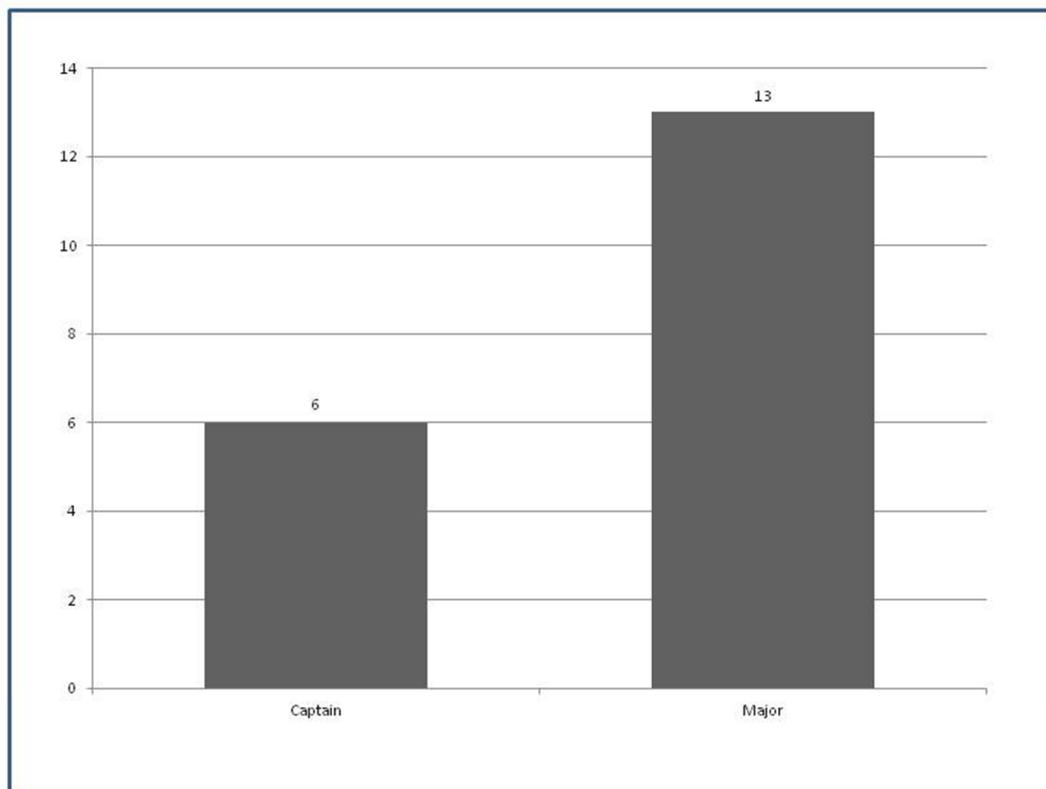
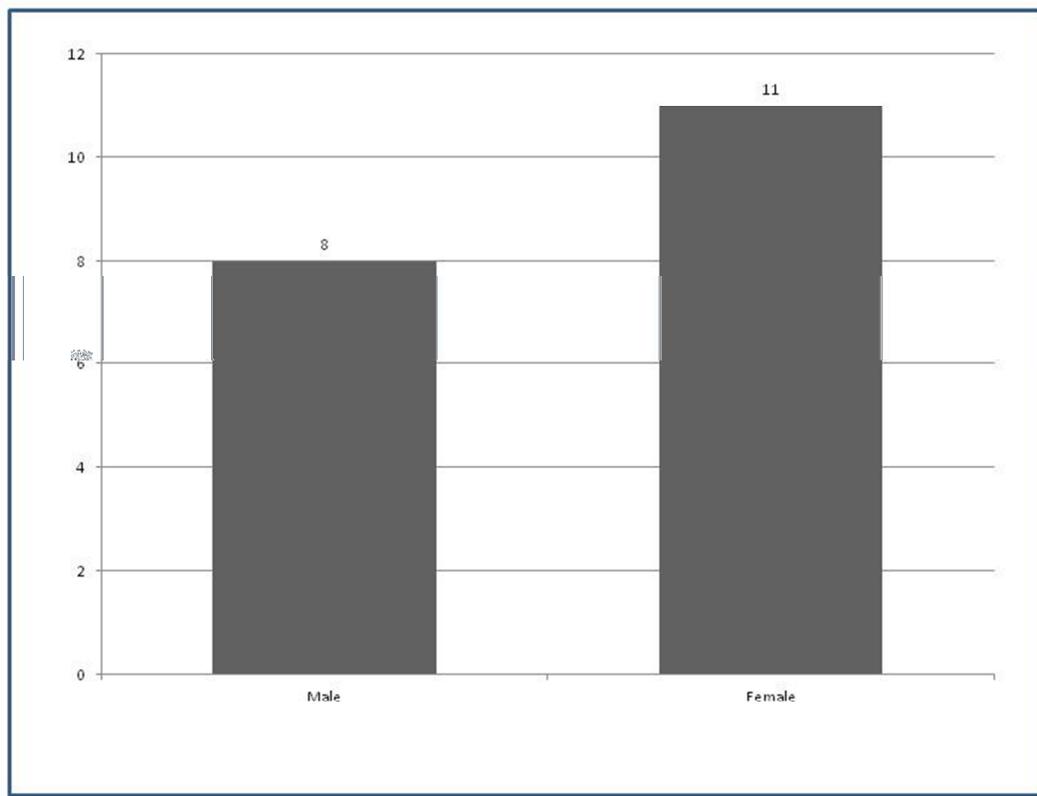


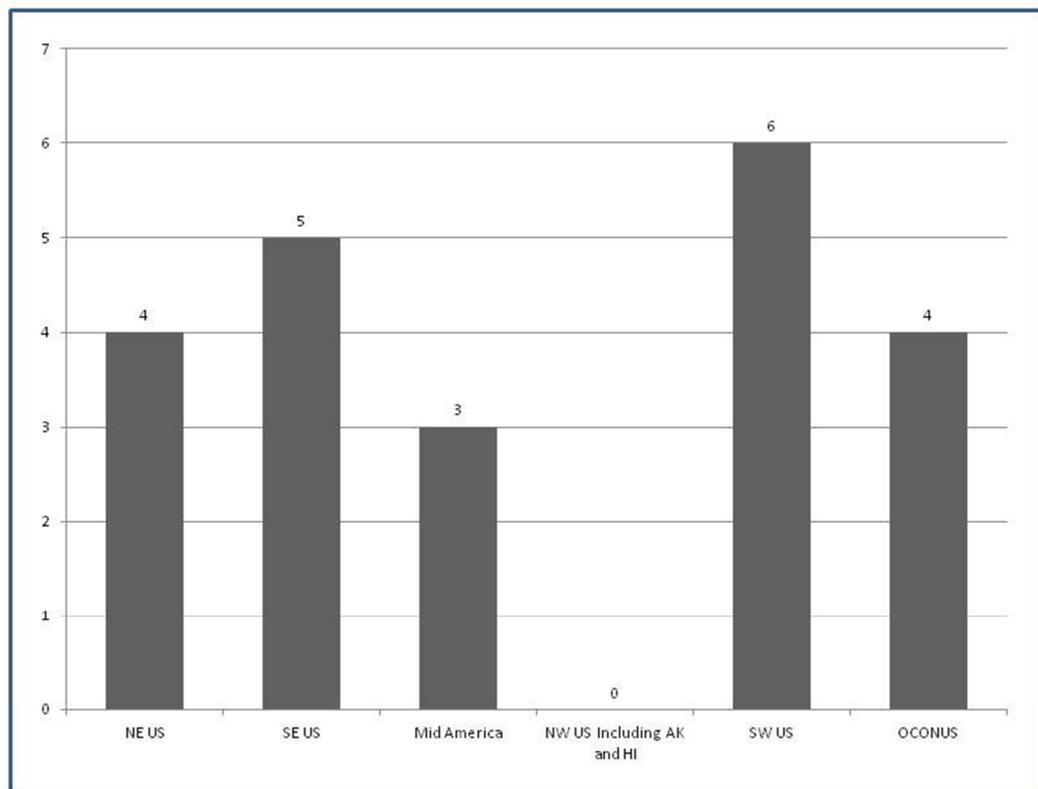
Figure D1. Army reserve component.



*Figure D2.* Rank.



*Figure D3.* Gender.



*Figure D4.* Location of residence.

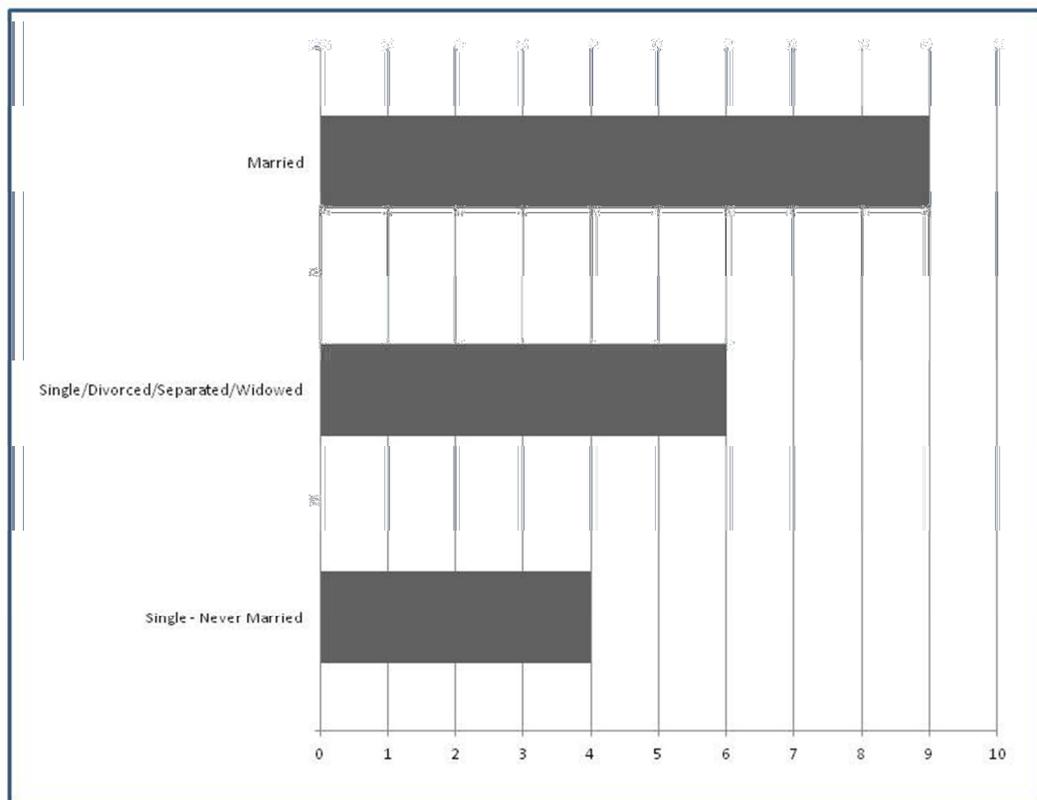


Figure D5. Marital status.

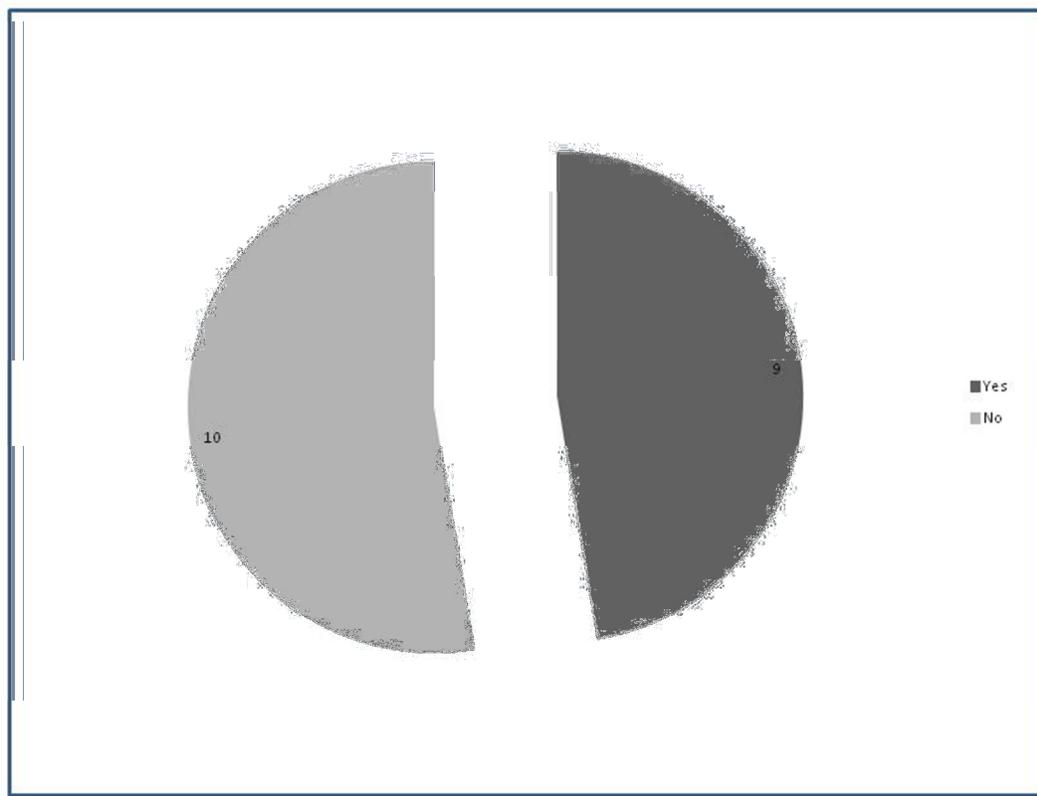


Figure D6. Dependent children.

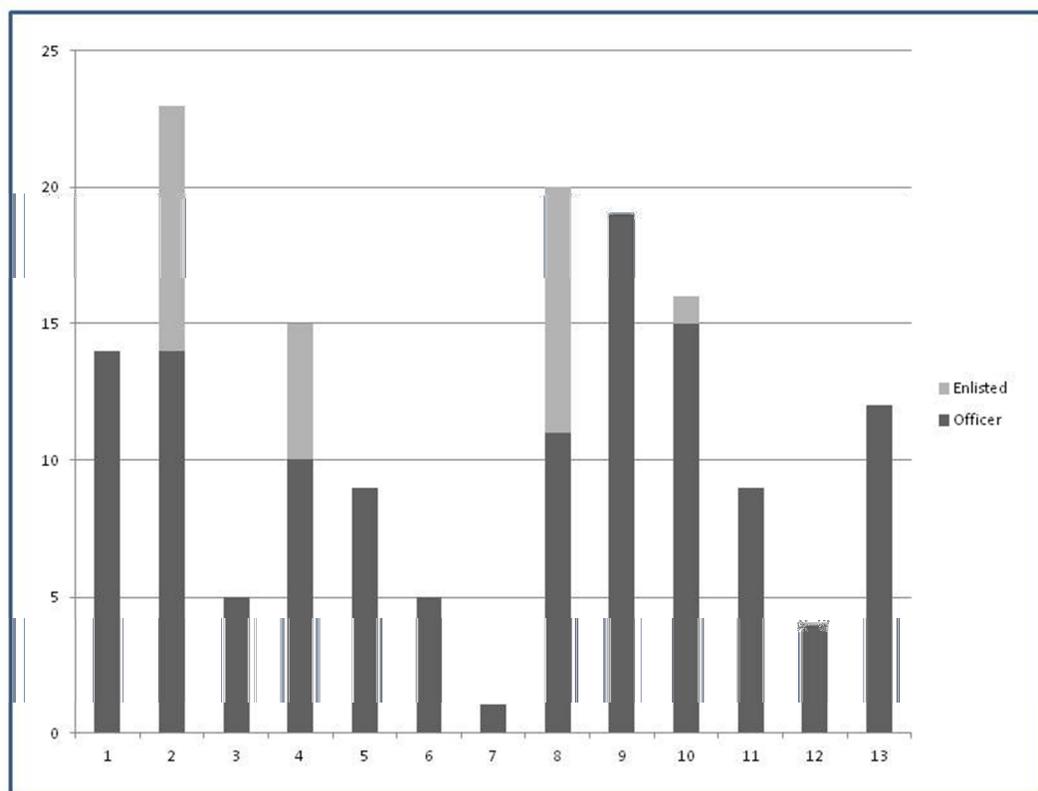
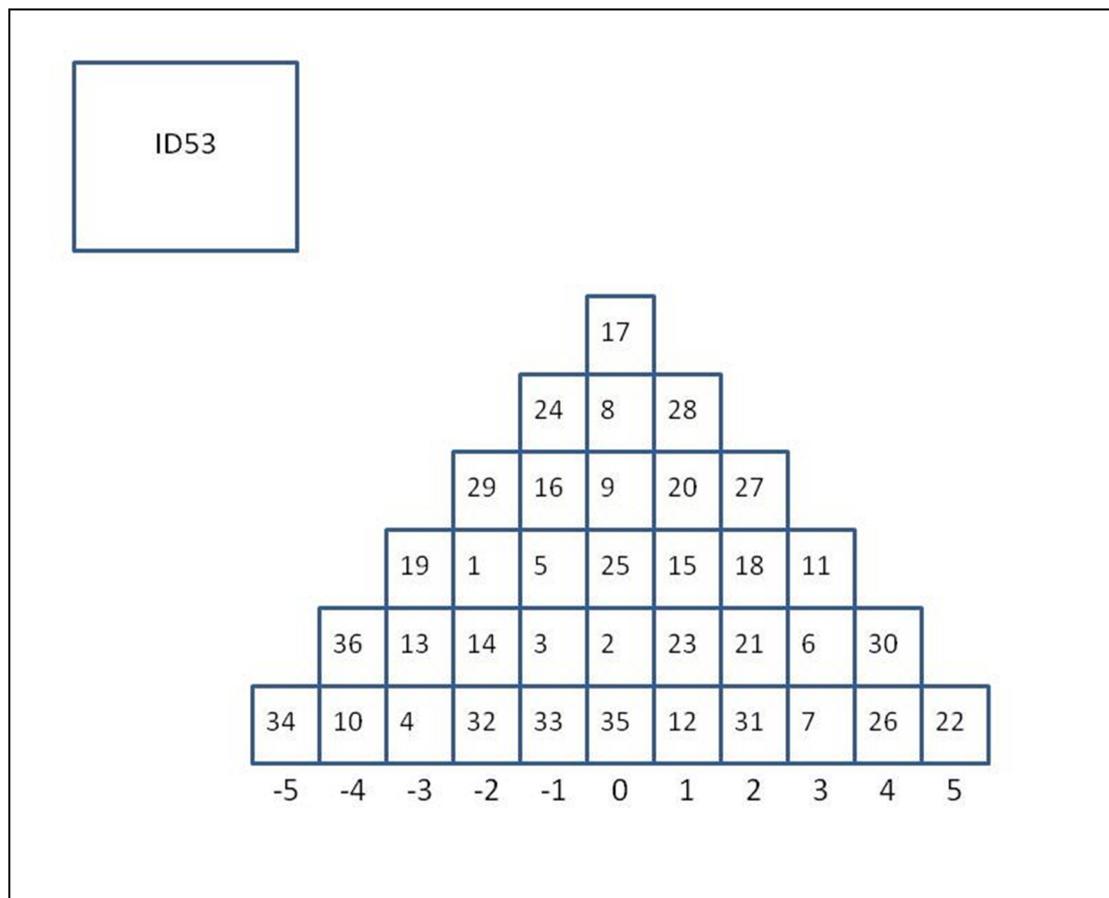


Figure D7. Years of service.

**Appendix E: Sample Response Matrix**

*Figure E1.* Sample response matrix.