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Situational Leadership Styles in United States Air Force Air Traffic Control Towers

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Air traffic control is one of the most dynamic and stressful jobs in the world. In the United States Air Force (USAF), it is not uncommon for 18 year-old Airmen to arrive at an air traffic control tower to begin on the job training after graduating from the four month basic air traffic control training course. Each controller is responsible for multiple multimillion dollar aircraft and hundreds of human lives each time control instructions are transmitted; therefore, control tower leadership is essential to maintaining a safe, orderly, and effective flow of air traffic.

Air traffic control watch supervisors must be able to transcend a solitary leadership style and when driven by the situation, morph from delegating to directing in a split second. Due to the fluid nature of the job, ever changing traffic conditions, and personality makeup of the personnel involved, air traffic control is the perfect environment to explore situational leadership.

United States Air Force air traffic controllers facilitated approximately 6.3 million aircraft operations in 2011 (Kahne, 2011). These numbers include domestic, international, and combat zone aircraft missions, referred to as sorties. Oxford Dictionary (2013) defines a sortie as an operational flight by a single military aircraft. By its very nature, air traffic control is a stressful profession; however, when you combine youthful inexperience and combat environments, it becomes a true pressure cooker. Although the majority, 64%, of operations was military aircraft, USAF air traffic controllers proved their capabilities by also assisting civilian pilots (Kahne, 2011). General aviation aircraft accounted for 27% of that total while commercial aircraft contributed 8% (Kahne, 2011). The final 1% of aircraft operations truly separated USAF air traffic controllers from their Federal Aviation Administration brethren, unmanned aerial systems, which had to be blended in with faster and more maneuverable aircraft (Kahne, 2011). Approximately one third of all these USAF operations were either combat or combat support sorties (Kahne, 2011). USAF air traffic controllers provide services from 68 control towers and 38 radar facilities worldwide (Air Force Personnel Center, 2012).

Although USAF air traffic controllers complete one of the most complex training regimens in the Air Force, it is simply impossible to train every situation a controller may encounter. This is where the watch supervisor intervenes.

There are many definitions of leadership; however for this study, Air Force Doctrine Document 1-1 defines leadership as "the art and science of

influencing and directing personnel to accomplish the assigned mission" (p.1). This definition takes into account two equally important components: personnel and mission (Air Force Doctrine Document 1-1, 2006).

Just as there are many definitions of leadership, there are numerous models to illustrate or define leadership styles. This study utilized Hersey & Blanchard's Situational Leadership Model (Hershey, Blanchard, & Johnson, 2012). Figure 1 illustrates the four leadership styles: (1) directing, (2) supporting, (3) coaching, and (4) delegating, as well as the two behaviors: (1) supportive and (2) directing. An additional factor for supervisors to consider is the developmental level of their subordinates. Figure 1 also incorporates subordinate development and suggests supervisors match subordinate development with the identical color coded leadership style. This is suggestive in nature and offers an approximate correlation.

Figure 1. Hersey and Blanchard's Situational Leadership Model.

To form a leadership style, Situational leadership combines directive and supportive behaviors. Directive behavior consists of telling people what to do, when to do it, how to do it, and then closely monitoring their performance (Blanchard, et al., 1985). Supportive behavior consists of listening to, supporting and encouraging people (Blanchard, et al.). The supportive leader then involves them in the decision making process (Blanchard, et al.). No single style is ever all

inclusive, hence the theory's name, situational leadership.

Directing or style 1 (S1) is considered high directive and low supportive leadership. This style is most appropriate with time critical tasks where leaders do not have time for supportive behavior (Blanchard, et al. 1985). Directive leaders provide specific direction and closely monitor task accomplishment (AFPAM 36-2241, 2011). In air traffic control, this is sometimes appropriate to prevent loss of required separation and immediate action is required.

Coaching or style 2 (S2) is considered high directive and high supportive leadership. This style is ideal for those who have some level of competence, but lack commitment (Blanchard, et al. 1985). Just as the style implies, think of an athletic coach. Their job is to motivate the team, teach them the system and involve them to get "buy-in" to the system to achieve the best possible results. Coaching style leaders continue "to direct and closely monitor task accomplishment but also take time to explain decisions, solicit suggestions, and support progress" (AFPAM 36-2241, 2011 p. 234).

Supporting or style 3 (S3) is a low directive and high supportive leadership. This style would be appropriate for employees who are competent in skill but may not be assertive to make decisions. Supportive leaders "facilitate and support people's efforts toward accomplishing tasks and shares responsibility for decision making with them" (AFPAM 36-2241, 2011 p.234). An air traffic control supervisor would apply this style when a controller understands the procedures but requires positive strokes of reinforcement to excel.

Delegating or style 4 (S4) is both low directive and low supportive. Delegating leaders turn over responsibility to the people doing the task (AFPAM 36-2241, 2011). This is used with your best workers, those who not only are capable of producing quality results, are internally driven to do so. Directly related to leadership styles is follower development. Although it is easy to correlate follower development with leadership style, they are not automatically tied together, e.g. S1 leadership style must be applied to a D1 follower. There will be times S2 leadership style is more appropriate for a D1 follower than S1 style.

The purpose of this study was to identify the preferred leadership styles implemented in the Air Traffic Control environment of the United States Air

Force. This study examined these leadership styles guided by the following research questions:

1. What leadership style does a watch supervisor employ during normal operations when a fully certified controller is in position?

2. What leadership style does a watch supervisor employ during emergency or complex operations when a fully certified controller is in position?

3. What leadership style does a watch supervisor employ during normal operations when an apprentice controller is in position?

4. What leadership style does a watch supervisor employ during emergency or complex operations when an apprentice controller is in position?

The Oklahoma State University (OSU) Institutional Review Board's Application for Review of Human Subjects Research was completed prior to conducting this research study in accordance with university policy. Permission to conduct this research study was approved by the OSU Institutional Review Board (IRB Application number: ED1296).

According to Chief Master Sergeant Joe Kirk, USAF air traffic control career field functional manager, the USAF air traffic control career field is only staffed at 68% for the top five enlisted grades (Kirk, 2012). Nearly one third of authorized supervisory positions are not filled to manpower limitations. These grades are the primary watch supervisors in control towers, so it is vital that every supervisor be as aware as possible of any leadership tool available. Figure 2 illustrates the discrepancy between the authorized personnel versus number of assigned personnel in each rank. Individual rank descriptors are as follows; AMN-A1C (Airman - Airman First Class), SrA (Senior Airman), SSg (Staff Sergeant), TSg (Technical Sergeant), MSg (Master Sergeant), SMS (Senior Master Sergeant), and CMS (Chief Master Sergeant).
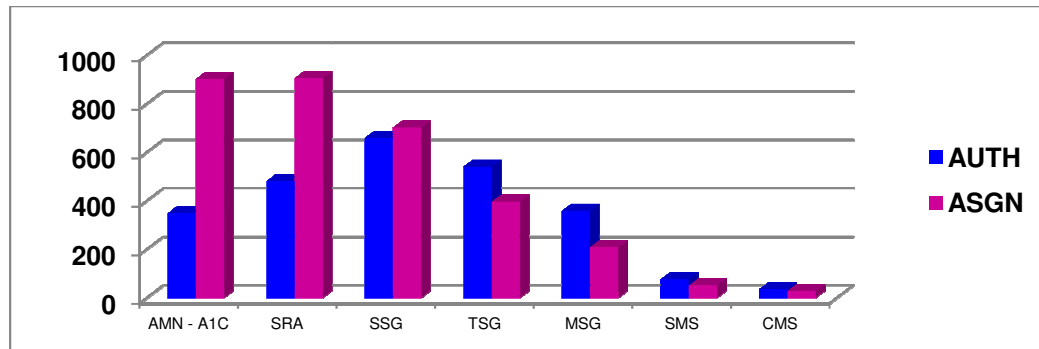
Figure 2. Current USAF Manning.

Many people believe leadership and management to be synonymous; however, this could not be more incorrect. Maxwell (2007) stated "leadership is about influencing people to follow, while management focuses on maintaining systems and processes" (p.13-14). During her retirement speech, retired United States Navy Admiral Grace Hopper summarized the difference "You can't manage men into battle. You manage things, you lead people" (Biography- Rear Admiral Grace Murray Hopper, USN, 2011).

An extremely important tenant of leadership is leadership by example. According to Kouzes & Posner (2010), you either lead by example or you do not lead at all. Leadership by example is known by many other less technical terms. "Practice what you preach" and "Walk the talk" are two terms most people have heard and said before (Kouzes & Posner, 2010). Vlamis (1999) summarized leadership by example in one simple word - integrity. Integrity is the heart of leadership, "Do as I say, not as I do", has no place in a leader's vernacular or actions. Perhaps former British Prime Minister Margret best summarized leadership: "Being in power is like being a lady. If you have to tell people you are one, you aren't."

Today's situational leadership theory is rooted in W.J. Reddin's 3-Dimensional Management Style developed in 1967 (Vecchio, 2007). Reddin suggested leader or manager effectiveness varied according to style (Vecchio, 2007). In 1969, Paul Hersey and Ken Blanchard developed a leadership model known as Life Cycle Theory of Leadership (Hershey, et al., 2012). Within this model, the life cycle theory examined degrees of task and relationship orientations in conjunction to follower's developmental levels (Vecchio, 2007). The theory

would later be renamed to its more commonly known name, situational (Blanchard, Zigarmi, & Zigarmi, 1985). No single approach is bad, but no single approach works with every person or every occasion.

Methodology

This study utilized the grounded theory of qualitative research. Creswell (2012) defined the grounded theory of research as "a systematic, qualitative procedure used to generate a theory that explains, at a broad conceptual level, a process, an action, or an interaction about a substantive topic" (p.423). Bloomberg & Volpe (2008) stated the two primary characteristics of grounded theory are the "constant comparative method of data analysis (i.e., the ongoing comparison with emerging categories) and theoretical sampling of different groups to maximize the similarities and differences of information" (p.11). Qualitative data was gathered via interviews with a chief controller from seven of the eight major commands (MAJCOMs) which host active duty air traffic control towers. Chief controllers exercise overall management responsibility for an air traffic control facility, whereas watch supervisors are only responsible for overseeing operations within the control tower cab. Chief controller duties include but are not limited to: establishing and maintaining a facility duty schedule, determining qualification and skill level upgrade training requirements and time lines, assigning watch supervisors and trainers, and mentoring all personnel assigned to the facility. Watch supervisors report directly to the Chief controller. Originally, one chief controller from each major command was scheduled to be interviewed but the decision was made to exclude Air Force Space Command from the study based on the fact there are only two bases with operational control towers, and they are both exclusively staffed by civilian air traffic controllers. Since two of the research questions involve situational leadership techniques involving apprentice controllers, and Air Force Space Command is staffed by civilian controllers and does not train apprentice controllers - the Air Force Space Command was excluded from this study.

Air Force Pamphlet 36-2241 (October 2011) defines a MAJCOM as:

A major Air Force subdivision having a specific portion of the Air Force mission. Each MAJCOM is directly subordinate to HQ USAF. MAJCOMs are interrelated and complementary, providing offensive, defensive, and support elements. An operational command consists (in whole or in part) of strategic, tactical, space,

or defense forces, or of flying forces that directly support such forces. A support command may provide supplies, weapon systems, support systems, operational support equipment, combat materiel, maintenance, surface transportation, education and training, or special services and other supported organizations. (p. 59)

The population for this study was chief controllers from seven of the eight USAF MAJCOMs with ATC missions. The MAJCOMs consisted of Air Combat Command (ACC), Air Mobility Command (AMC), Pacific Air Forces (PACAF), U.S. Air Forces in Europe (USAFE), Air Education and Training Command (AETC), Air Force Materiel Command (AFMC), Air Force Global Strike Command (AFGSC) and Air Force Space Command (AFSPC).

This study utilized purposeful sampling. Purposeful sampling is defined as "a qualitative sampling procedure in which researchers intentionally select individuals and sites to learn or understand the central phenomenon" (Creswell, 2012, p. 626).

Rubin and Rubin (2012) stated: "Technical experts usually enjoy talking about their fields. Technical experts are more likely to spend time talking to you if they recognize that you have done your homework, that you are not ignorant, and that what you are asking about is not generally known" (p.176). USAF air traffic control chief controllers are considered technical experts and were interviewed and asked each research question. According to Air Force Instruction 132-204V3 (2010) "CCTLRs are responsible for managing the overall ATC radar or tower facility operations, as well as directly supervising assigned personnel" (p.44). A sampling of chief controller key responsibilities are: "Determine the minimum number of qualified controllers required for duty based on published facility hours, services required by assigned flying units and scheduled flying activities, ensure controller training is implemented in accordance with the Training OI (TOI) and initiate corrective actions as necessary, ensure that upgrade training and Special Experience Identifier (SEI) information is validated and submitted to the Unit Training Manager (UTM) for inclusion in the individual's personnel record" (Air Force Instruction 13- 204, 2010, p. 44). An SEI is defined as:

A three-character code that identifies special experience training not otherwise identified in the personnel data system. Specialty Experience Identifiers may permit rapid identification of individuals with special

qualifications to meet peacetime assignments. They provide a means for identifying critical manning requirements during wartime or contingency operations when little lead time is available for training personnel in specific technical skills (Air Force Instruction 13- 204, 2010).

The panel of ten experts selected to validate this study, averaged 25.6 years of experience and were facility rated, or fully qualified in approximately seven (6.9) different control towers.

Creswell (2012) defined validity as: "The development of sound evidence to demonstrate that the intended test interpretation (of the concept or construct that the test is assume to measure) matches the proposed purpose of the text. This evidence is based on test content, responses processes, internal structure, relations to other variables, and the consequences of testing (p.630)." Furthermore, Creswell (2012) defined reliability as: "Means that individual scores from an instrument should be nearly the same or stable on repeated administrations of the instrument and they should be free from sources of measurement error and consistent" (p.597).

Implementing Creswell's previously mentioned steps; a panel of ten experts were selected and asked to participate in the study to establish a preferred leadership style baseline. A 25 question, multiple choice questionnaire (Appendix A) was developed and administered to a panel of ten experts. Each research question was equally referenced in the instrument. Questions were scenario-based, and posed the same question, "What leadership style would you use?" Each expert provided feedback to the 25 question questionnaire. Expert respondents were asked to rank the choices for each question from most preferred to least preferred. The results are reported in Appendix B.

Although leadership style is an individual decision, the questionnaire answers were weighted from best to worse. Based on the mean of the expert's choices, the following weights were assigned to each choice: the best choice +2, second best choice +1, third best choice -1, and fourth best choice -2. This data was later compared to the responses received from the chief controller interviews to establish a preferred leadership style baseline. Instead of merely selecting the choice they felt to be the most correct answer, the subject matter experts were asked to individually rank each leadership style for the given scenarios from best to worst choice.

Questions were grouped into clusters based on their relationship to the study's research questions. The mean of the experts' responses was used to determine the best response to each question before it was submitted to study sample. Data analysis consisted of clustering the expert's responses to each of the 25 questionnaire questions to support the four research questions and developing total scores across an item cluster.

After the preferred leadership styles baseline was established, controllers from the MAJCOM Centers were asked a total of 16 questions via the structured interviews. Each open-ended question directly supported one of the main four research questions. Vast geographical distances necessitated telephonic interviews. Each interview was conducted using a recorded communications console.

Chief Controller 1 has worked in seven air traffic control towers during a 19 year career. He has led operations at two control towers and his facility was selected twice as his major command's D. Ray Hardin Air Traffic Control Facility of the Year. He has amassed many individual honors as well, including his major command's enlisted air traffic control manager of the year. He manages a USAF control tower overseas and stated his trainer and monitor core is experienced and traffic conditions at his facility are busy and very complex. His facility's training capacity is at its operational limit and apprentice controllers normally are fully certified in 9 to 12 months. The facility has a successful training program as evidenced by only having one apprentice controller withdrawn from training in the previous 18 months.

Chief Controller 2 has worked in eight air traffic control tower spanning his 14 year career. He has managed two air traffic control towers, and the first facility he led earned Airfield Operations Flight of the Year and the Commander in Chief's Installation Excellence Award. He manages a control tower in the continental U.S. and stated his trainer and monitor core is not very experienced. He further stated that traffic volume and complexity at his facility are very low He identified a significant training challenge at his facility which in part resulted in the withdrawal of three apprentice controllers in the previous 18 months while operating at training load of 125%.

Chief Controller 3 is a 23 year veteran of USAF air traffic control towers. He has been facility-rated in seven control towers and has been facility manager in three of these towers. This chief controller manages a control tower overseas,

which in terms of volume traffic is low; however conditions are very complex due to restrictions placed on traffic pattern management by the host nation. Despite juggling a 150% apprentice controller training load, his facility had zero apprentice controllers withdrawn in the previous 18 months of this study. He considered his trainer and monitor core experience as average and apprentice controller certification time averages nine months.

Chief Controller 4 has been assigned to seven control towers during his 15 year career. He has been facility manager at four control towers and his outstanding efforts led to his facility earning Air Field Operations Complex of the Year four times. This dynamic leader earned promotion to technical sergeant via the United States Air Force's Stripes to Exceptional performer program. According to a 2007 interview, former USAF Chief of Staff General T. Michael Mosey stated only 310 of the over 282,000 or 1.25% of the enlisted force would earn this honor. He described his stateside facility as very low volume and low to moderate complexity. Despite being manned at 130% in qualified controllers, he considers his trainer monitor core experience level as low. Even though he faced a challenge of a 500% increase in his apprentice controller training load, he only had withdrawal from training.

Chief Controller 5 has been assigned to seven control towers and has led operations at three of these towers. He manages a moderately busy stateside control tower in terms of traffic volume. He stated in terms of complexity, conditions are very simplistic. His apprentice controller training load is currently 300% and has had four controllers withdraw from training in the previous 18 months before this study. He believes the lack of experience in trainers and monitors was a key reason for three of the four withdrawals. He believes apprentice controllers average eight months to achieve full certification.

Chief Controller 6 has been assigned to nine control towers during his 15 year career. His current assignment is his second facility in which he has led operations. His leadership was essential to two major command D. Ray Hardin Air Traffic Control Facility of the Year awards. This chief controller manages a stateside control tower staffed at 180% of certified controllers and considers his trainer and monitor core very experienced; and despite a 900% increase in apprentice controller training, has only had two controllers withdrawn from training in the prior 18 months. He stated it takes an average of eight months for an apprentice controller to earn facility certification.

Chief Controller 7 has been fully certified in nine control towers both within the U.S. and abroad. He is an 18 year veteran leading his first facility. He has earned numerous personal accolades including Noncommissioned Officer of the Year three times for his squadron and many other quarterly awards. He was named an Outstanding Performer during two Air Traffic Systems Evaluation inspections.

Chief Controller 8 was selected to fill in for the Air Force Space Command. He was selected because of his extensive experience, track record of outstanding results and complexity of operations at his current facility. He has led nine USAF air traffic control towers during his 19 year career, garnering four MAJCOM level and two Air Force level D. Ray Hardin Air Traffic Control Facility of the Year awards. His current facility has a 700% training load of apprentice controllers. He has earned numerous personnel accolades as well.

Each chief controller's answers to the research questions were assigned a value as follows: Directing Leadership - 1, Coaching Leadership - 2, Supporting Leadership - 3, and Delegating Leadership - 4. Each respondent's answers were logged and the average answer was compared to the expert panels' mean answers for comparative purposes.

In order to quantify the data retrieved from the MAJCOM representatives, the mean of their responses was utilized in this study. Employing standard rounding, (1-1.49 rounded down to represent directive leadership, 1.50 - 2.49 rounded to represent coaching leadership, 2.50 - 3.49 rounded to represent supporting leadership, and 3.5 - 4.0 rounded to represent delegating leadership), it was understood that this methodology tended to favor the middle responses since their spread was twice as wide. This fact being understood and acknowledged, all of the MAJCOM representatives means were unquestionably aligned with the corresponding weighted value assigned to the leadership style outlined in the previous paragraph.

Findings

The study's findings compared very favorably to the results of the experts panel. In every instance the interview participants agreed with the experts' first or second leadership style as the appropriate style in the given scenario. It is very unusual to get 18 independent leaders to align so closely on a concept such as leadership.

In such a stressful environment as an air traffic control tower, it would not be a stretch to think that the most common leadership style would have been directive. The fact that the preferred style in most instances was coaching or supporting is a testament to the supervisors' skill and professionalism and mirrors the results of a similar 2007 Swedish quantitative study entitled Situational Leadership in Air Traffic Control. Arvidsson, Johansson, Rasa, & Akselsson (2007) conducted a quantitative study consisting of 32 scenario based questions with four possible responses. Of the 635 questionnaires distributed, 308, or 49% where returned and examined. Arvidson & et al. (2007) found that in each of the four areas they examined the prevailing preferred leadership style was participating or supporting. Additionally, Arvidson & et al. (2007) noted more research is needed to study the linkage between specific leadership styles and safety-related organizational aspects and working environment air traffic control.

According to Rickard Bergh (2012) of the Swedish Air Traffic Controllers Association, Swedish control tower personnel facilitated the safe arrival and departure of 385,000 aircraft operations in 2001. There is a large disparity in the number of operations handled by Swedish control towers and the 3.4 million operations handled by USAF tower controllers. The nearly 9:1 ratio and nature of the study notwithstanding, the information captured in the previous study provided an interesting backdrop for this study.

Regarding the research questions, research question 1: "What leadership style does a watch supervisor employ during normal operations when a fully certified controller is in position" yielded a split result. Fifty percent of the respondents selected supporting leadership as the preferred style, while 37% stated delegating style was the preferred method. Seven out of eight chief (87.5%) controllers selected low directive behavior as the most appropriate style. The experts' panel selected supporting leadership style as the best choice. An average of the MAJCOM representative's answers also selected supporting leadership as the most appropriate leadership style during normal operations.
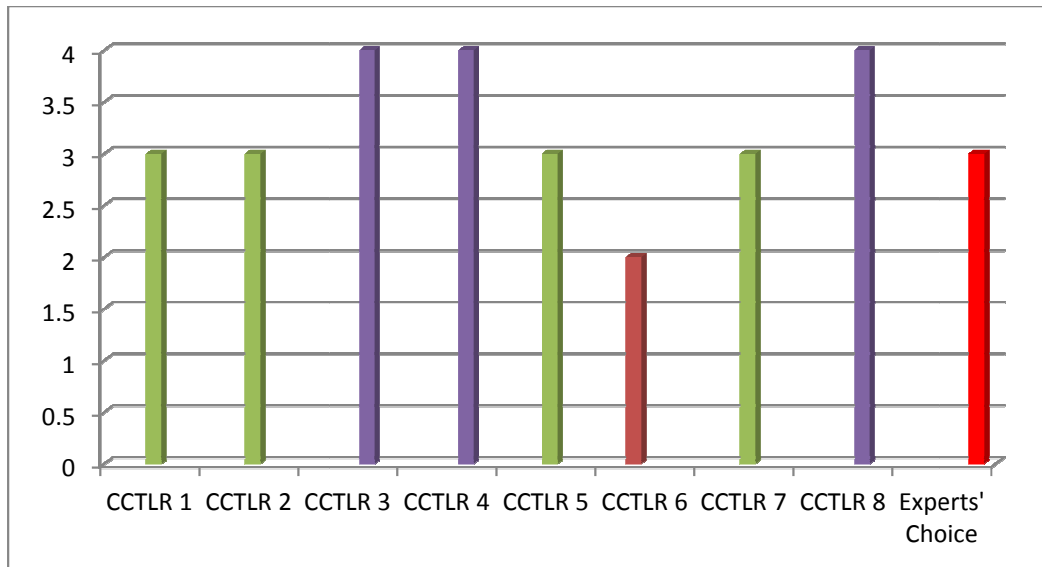
Figure 3. Responses to RQ 1.

Research question 2: "What leadership style does a watch supervisor employ during emergency or complex operations when a fully certified controller is in position?" was the most common response. Supporting leadership style garnered 63% of the responses (5 out of 8), while coaching received two responses and delegating received one response. These responses were very similar to the experts' panel as well. The experts' panel chose coaching leadership as the preferred leadership style during emergency or complex operations. The experts' consensus second most appropriate leadership style in this instance was supporting leadership. An average of MAJCOM respondent selections led to an overall selection of supporting leadership style as the representative choice.
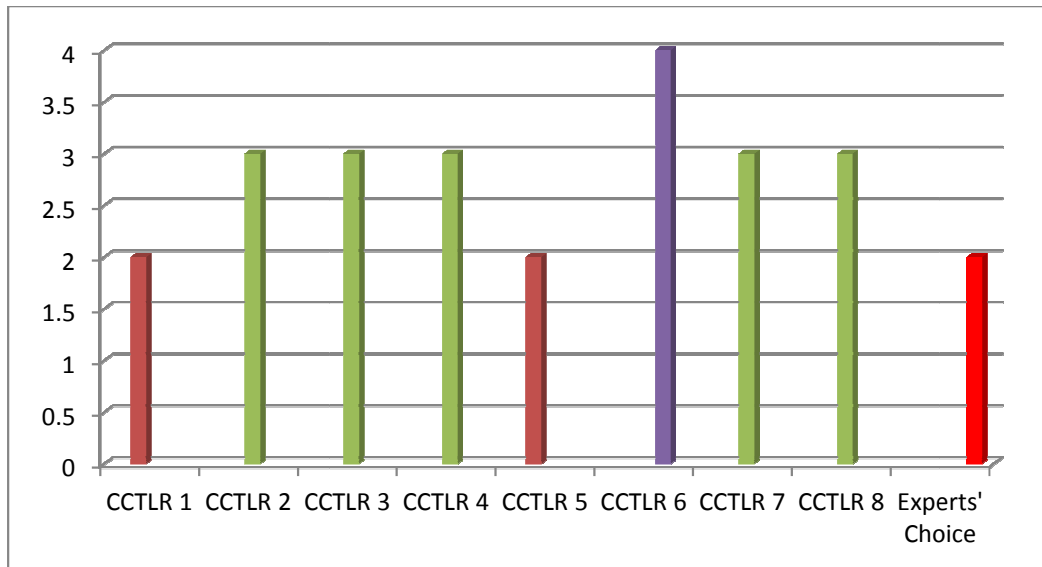
Figure 4. Response to RQ 2.

Research question 3: "What leadership style does a watch supervisor employ during normal operations when an apprentice controller is in position?" was the second most one-sided of the responses. Six of the eight chief controllers stated coaching was the preferred leadership style in their facility, while the remaining two selected supporting style. The key to this question was 100% of chief controllers interviewed recognized the importance of high supportive behavior when apprentice controllers are in position. The MAJCOM representatives again disagreed with the expert panel on the best choice for this question. The MAJCOM representative's selection, coaching leadership style, was actually the expert panel's second best choice. The expert panel selected directive leadership as the most appropriate style for this situation.
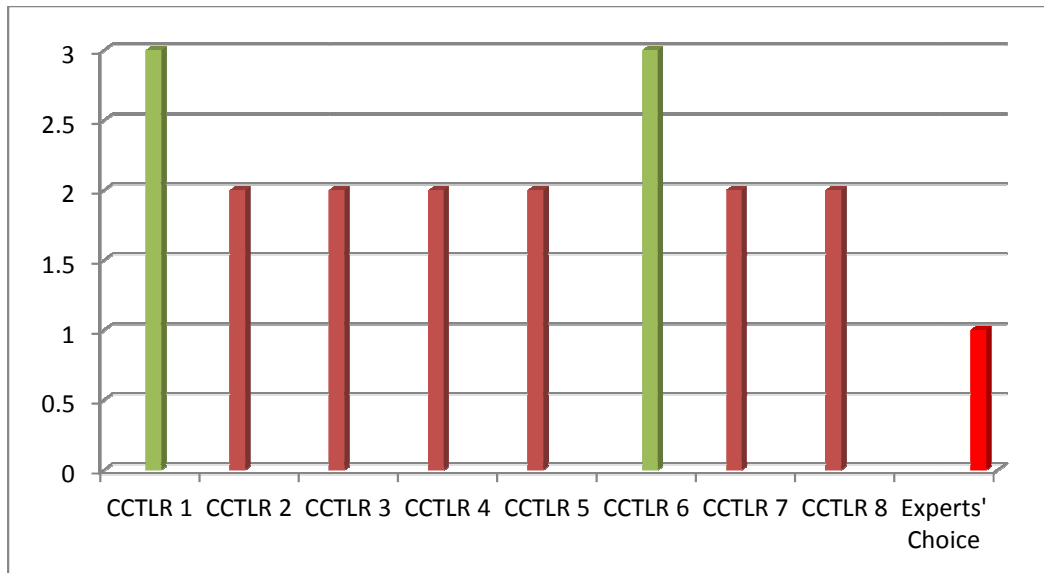
Figure 5. Responses to RQ 3.

The final research question: "What leadership style does a watch supervisor employ during emergency or complex operations when an apprentice controller is in position?" yielded the most definitive results. Seven of the eight (75%) of the chief controllers stated high directive behavior was vital. The remaining respondent stated high supportive and low directive behavior (supporting leadership) was the preferred style in this instance. The MAJCOM representatives selected directing leadership style as the best choice for this situation, disagreeing with the experts' panel. The expert panel selected supporting leadership style as the best choice and coaching leadership style as the second best choice.

Figure 6. Responses to RQ 4.

Conclusions

The majority of the MAJCOM representatives confirmed the experts' first or second choice as the best leadership style in each researc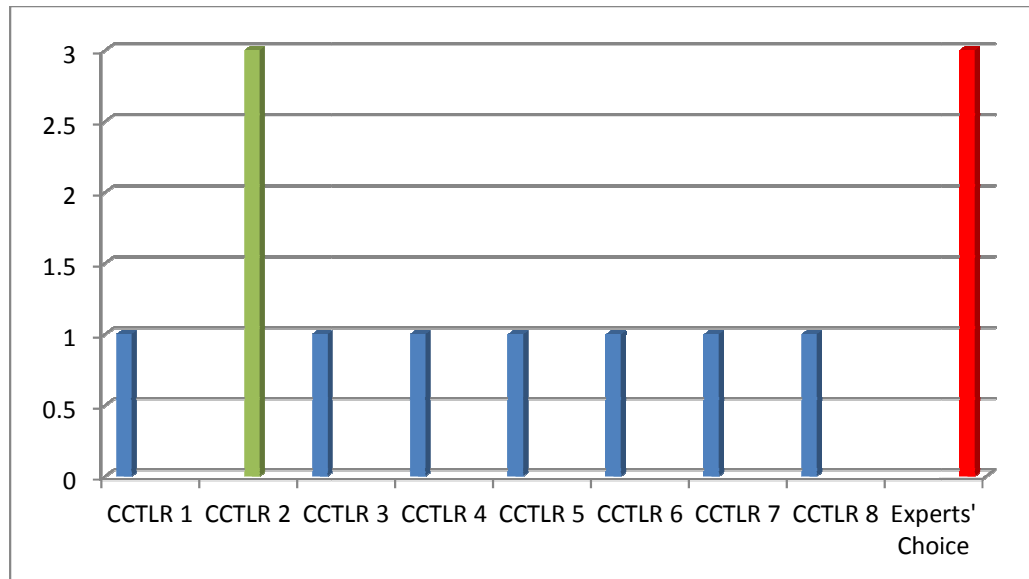h question. The biggest discrepancy occurred in research question 4, where the more experienced experts' panel selected supporting style while the MAJCOM representatives selected directing as the preferred style. This disparity could illustrate the experience gap in the two groups. Nevertheless, leadership styles are extremely subjective, so getting 18 leaders to align this closely was very surprising.

Each research question yielded at least a 75% rate of agreement within one leadership style, i.e., supporting to coaching, while three of the four questions rendered an 87.5% agreement rate within one leadership style. Overall, one major theme emerged over the course of the study, the importance of the experience level of not only the line controllers but the watch supervisors and trainers/monitors as well. Experience level was consistently identified as problematic throughout the study.

The lack of experience was eye opening. As previously stated, the USAF is only staffed at 68% for the top four enlisted ranks. Historically, these ranks make up the majority of control tower leadership. Due to the lack of personnel, tasks

have been "pushed down" a rank, for example duties such as watch supervisor traditionally assigned to technical sergeants (E-6) are now being carried out by staff sergeants (E-5). So, in essence, supervisors with 4-5 years' experience are that now responsible for duties previously reserved for personnel with 8-10 years' experience. This is not by choice, but simply by necessity, due to the lack of personnel.

Among the chief controllers interviewed, the average upgrade time for an apprentice control was approximately nine months. However, when one calculates in the eight months of basic military and air traffic control technical training - the total time in service for a brand new certified controller is approximately one and half years. The USAF mandates a minimum of four years of experience from the date a controller graduated technical training to become a watch supervisor. According to the Air Force Personnel Center, of the 722 staff sergeants in the air traffic control career field, 11% have the minimum four years requirement to become a watch supervisor. Overall, 78% of all air traffic control staff sergeants have between four and eight years of service time and this datum is for all air traffic controllers, bear in mind radar approach controls are normally staffed at twice the levels of control towers. The disparity in staffing levels between control towers and radar approach controls is based on the number of operating positions within the facility. Control towers universally have five operating positions; radar approach controls have a huge variance on the number of positions. Typically, controller towers assigned airspace is a five statute mile radius around the geographical center of the airport, up to 3,000 feet above ground level, radar approach controls airspace varies widely but on the average is a 40 mile radius around the airport, up to 15,000 feet above ground level. On the high end, controllers with six and half years of experience are leading crews.

Approximately 10 years ago the USAF recognized the need for continuity and staffing during an era of very high operations tempo. Military air traffic controllers were deploying worldwide in response to the terrorist attacks of September 11, 2001 leaving a tremendous void at the bases from which they were deployed. Across the Air Force, nearly 500 recently retired or separated military controllers were hired to maintain continuity of operations. Each chief controller who stated their experience level was low, mentioned the civilian workforce at their base as the lynchpin for their training programs.

As the adage goes, "there is no substitute for experience." The more experience a controller has - the better they can handle a given situation. Air

traffic control work can only be learned by actual "time on the mike". The more experience trainers and supervisors have, the farther they can let trainees stray before they have to intervene. The more latitude that can be given to a trainee the lower the learning curve will be for them. Military control tower staffing although at all-time highs numerically, is nearly at all-time lows in experience level.

Six of the eight chief controllers or 75% of those interviewed stated the experience level of their trainers and monitors was very low. Only one stated the experience level at his facility was high, while the remaining chief controller stated his trainers and monitors had average experience. Of the six facilities with low experience levels, trainees experienced longer than average certification times, and higher elimination rates.

As previously stated any unrated controller is not allowed to take position without an experienced and rated controller, also known as a "monitor" plugged in with them. This safety net is expanded further when apprentice controllers are working live traffic. The monitor is responsible for the decisions made by the trainee, while ultimate responsibility for everything lies with the watch supervisor. In the event the trainee makes an erroneous transmission, it is the monitor's job to correct the instruction immediately. Six of the eight chief controllers interviewed mentioned the monitor's role would be the more directing approach while the supervisor would engage in a more supporting or coaching role. At first glance it would appear that a very laissez-faire leadership style existed; however when taking into account the role of the monitor as the first line of defense, the supervisors more supportive and less directing role was easier understood.

The second emergent sub theme, apprentice controllers are not allowed to work emergency situations was echoed as well. In accordance with Air Force Instruction 13-204 (2010) apprentice controllers are not allowed to work emergency aircraft unless being formally evaluated for position certification. Therefore, all responses to research question 4 were targeted at complex operations only.

Recommendations for Further Research

Although this study was able to accomplish its goal of determining which leadership style is preferred in a given situation, it would be interesting to learn

the results of a much broader reaching study, whereas, 300 supervisors were surveyed and their data meshed together. Currently, the Air Force has a moratorium on new research studies, but perhaps in the future a researcher can obtain permission to conduct a much more extensive study and compare the results of broader scope survey with this one and see if the results are comparable. Facility chief controllers normally can readily identify trends in their facilities; gaining first hand responses from the supervisors would be very valuable.

Additionally, almost every chief controller stated their training load far exceeded their authorizations and capabilities. This directly impacted the time it took apprentice controllers to earn facility ratings and skill level upgrade. Trainee performance is a huge determinant of how long upgrade time is, however, there are factors beyond the trainee's span of control that drive upgrade time up. One of the most prevalent is training load. Each chief controller who was interviewed stated they were at least 100% manned in apprentice controllers, while some reported as much a 900% training load and trainees being in stopped training for up to six months due to the bottleneck. Air Force Instruction 13-204 (2010) defines stopped training as "When a trainee is unable to accomplish knowledge based (including classroom instruction), simulator (including static scenarios), and OJT due to unforeseen events or inability to meet standards" (p.110). Many apprentice controllers were in "stopped training" for as long as four months. With a historic elimination rate of 30-35% during normal training levels, perhaps a future study should be conducted to address the impact the saturation of apprentice controllers has on a facilities ability to train.

A study centered on monitor interaction with trainees would prove fruitful for future trainers. Since monitors interact so closely with apprentice controllers while controlling live traffic, it would be a worthwhile endeavor to examine the dynamic between the monitor and apprentice controller.

Furthermore, additional research on the same information, except on civil air traffic controllers. This study would determine if there is a difference between civilian and military leadership styles.

Finally, a study showing the impact of mixing civil service air traffic controllers with military personnel would show if the impact on facilities is as great as the chief controllers interviewed believe. From all indications, civil service personnel have surpassed all expectations of simply providing continuity of operations and a study on their breadth of duties and impact would be greatly

beneficial to not only the United States Air Force, but other military services employing civil service personnel as air traffic controllers as well.

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APPENDIX A
SITUATIONAL LEADERSHIP SUBJECT MATTER EXPERT

You have been selected as a subject matter expert to validate the results of my dissertation study. Please rank your answers from 1-4: 1 being the most correct, 2, being the next best, 3, being the third best answer, and 4 being the least correct answer. There are 25 scenarios, so it should only take approximately 20 minutes. Thank you in advance!

1. AA is a three level who has excelled in training. She is working local control during a weather recall. What type of leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

2. BB is a newly rated controller. Although he has earned his rating, he is still aggressively seeks new challenges. What type of leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

3. CC is your strongest controller. She is working local control during a complex traffic period. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

4. DD is working local control for the first time. His monitor has only been rated for eight months. Due to a construction project, you must perform single runway operations for arrivals and departures. What type of leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

5. EE has been rated in your facility for two years. She has a reputation as a very strong controller with a positive attitude and aggressively seeks new challenges. A

new tactical pattern has recently been implemented and this is her first time applying it. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

6. FF is a complacent, fully rated controller who often misunderstands pilot requests. Traffic conditions are normal for your facility. What leadership style would use?( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

7. GG is the facility's controller of the year. She is the quintessential "go to" controller. She is working local control on the fly in day of the air show. What leadership style would you use?

 ( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

8. HH has a saturated pattern. He begins mixing up callsigns, and stammering when issuing instructions. He has the reputation as being a solid performer. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

9. JJ is known to push the envelope when he gets busy, often taking short cuts to make things work. He is working local control during an ORI recovery. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

10. KK is a seasoned controller and trainer. You have assigned him to train a newly assigned three level. Bearing in mind the trainee is brand new, what leadership style would you apply?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

11. LL, an apprentice controller half way through local control training has only worked fighters in the simulator. The pattern is empty and two flights of four fighters divert to your base. What leadership style would you apply?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

12. MM is an apprentice controller who has never encountered an aircraft cable engagement. He has an emergency F-18 inbound who intends to take the cable. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

13. NN is experiencing difficulty in training. In his training evaluations, it has been continuously noted he has a negative attitude toward his training and is argumentative with his trainers. What leadership style would you use?
( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing
14. OO is facility rated, and considered a strong controller. Traffic went from moderate to busy very quickly. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

15. PP, a fully rated controller, is working ground control and two of the main taxiways are closed. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

16. QQ is a highly motivated three level. Despite his motivation, during normal to busy traffic, he struggles to keep up. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

17. RR is progressing satisfactorily in training. She takes position with during normal traffic conditions, with all patterns open. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

18. SS is a motivated apprentice controller. It is her second week in clearance delivery and still can't formulate a correct IFR clearance. What leadership style would you use?

 ( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

19 TT is a strong controller. You want to begin his training in coordinator, however, he realizes that once he gets coordinator certified it will mean less

breaks and is procrastinating at every opportunity. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

20. UU is working an exercise alert launch. She is working hard, but continues to incorrectly apply local procedures. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

21. VV is nearly ready for his rating, He is working a saturated pattern of fighter aircraft. He is not comfortable using reduced same runway separation, and service is starting to be degraded. What leadership style would you use?
 ( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing
22. WW is a newly promoted SSgt who has completed seven level training and is now in watch supervisor training. He has demonstrated trouble applying tasks even though you have gone over the material several times with him. His motivation is starting to wane. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

23. XX has been assigned as your crew's proficiency monitor. Last month, three people on your crew failed to meet proficiency requirements, because XX incorrectly filled out the proficiency tracker software. This adversely affected your ability to staff the facility. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

24. YY, an apprentice controller, signed off the new procedural change in the read file, however he has continuously forgotten to apply it in live traffic. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

25. ZZ, an apprentice controller, instructed a KR-35 to turn base inside a F-16 on a five mile final. Loss of required separation is certain to occur. What leadership style would you use?

( ) Delegating ( ) Supporting ( ) Coaching ( ) Directing

COMMENTS: Are there any questions or situations you feel should be included on this study? If so please include below.

APPENDIX B
EXPERT PANEL VALIDATION

	Yrs of Exp	Control Tower Ratings	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6n	Question 7	Question 8	Question 9	Question 10	Question 11	Question 12
EXPERT 1	22	6	2, 1, 3, 4	3, 2, 1, 4	1, 2, 3, 4	4, 3, 1, 2	4, 2, 1, 3	4, 3, 1, 2	2, 1, 3, 4	3, 2, 1, 4	4, 3, 1, 2	2, 1, 3, 4	4, 2, 1, 3	4, 3, 2, 1
EXPERT 2	30	8	4, 1, 2, 3	3, 1, 2, 4	1, 2, 3, 4	4, 2, 1, 3	2, 1, 3, 4	2, 1, 3, 4	3, 1, 2, 4	4, 3, 1, 2	4, 1, 2, 3	1, 2, 3, 4	3, 2, 1, 4	3, 1, 2, 4
EXPERT 3	26	6	3, 2, 1, 4	3, 1, 2, 4	1, 2, 3, 4	4, 3, 2, 1	1, 2, 3, 4	4, 2, 1, 3	1, 2, 3, 4	4, 3, 2, 1	4, 3, 1, 2	1, 2, 3, 4	3, 2, 1, 4	3, 2, 1, 4
EXPERT 4	25	9	4, 2, 1, 3	3, 1, 2, 4	1, 2, 3, 4	4, 2, 1, 3	2, 1, 3, 4	4, 2, 1, 3	1, 2, 3, 4	4, 3, 2, 1	4, 3, 1, 2	1, 2, 3, 4	4, 1, 2, 3	4, 3, 1, 2
EXPERT 5	22	7	3, 1, 2, 4	4, 2, 1, 3	3, 1, 2, 4	4, 1, 2, 3	3, 1, 2, 4	4, 1, 3, 2	3, 1, 2, 4	4, 1, 3, 2	4, 1, 3, 2	2, 1, 3, 4	4, 1, 3, 2	4, 3, 2, 1
EXPERT 6	20	5	3, 1, 2, 4	4, 2, 1, 3	1, 2, 3, 4	4, 3, 1, 2	4, 2, 1, 3	4, 3, 1, 2	2, 1, 3, 4	4, 1, 2, 3	4, 3, 2, 1	1, 2, 3, 4	4, 3, 2, 1	4, 3, 2, 1
EXPERT 7	25	7	4, 2, 1, 3	3, 1, 2, 4	1,2, 3, 4	4, 3, 2, 1	3, 1, 2, 4	4, 3, 2, 1	2, 1, 3, 4	4, 3, 1, 2	4, 3, 2, 1	1, 2, 3, 4	4, 3, 1, 2	4, 3, 2, 1
EXPERT 8	27	6	4, 2, 1, 3	3, 1, 2, 4	3, 1, 2, 4	4, 3, 1, 2	4, 1, 2, 3	4, 3, 1, 2	3, 1, 2, 4	4, 3, 2, 1	4, 3, 2, 1	2, 1, 3, 4	4, 3, 1, 2	4, 3, 2, 1
EXPERT 9	29	7	3, 2, 1, 4	1, 3, 2, 4	3, 1, 2, 4	4, 3, 2, 1	3, 1, 2, 4	4, 1, 2, 3	3, 1, 2, 4	4, 3, 2, 1	4, 1, 2, 3	3, 1, 2, 4	4, 3, 2, 1	4, 3, 2, 1
EXPERT 10	30	8	1, 2, 3, 4	4, 1, 2, 3	1 ,2, 3, 4	4, 1, 2, 3	4, 1, 2, 3	4, 3, 1, 2	1, 2, 3, 4	4, 3, 1, 2	4, 3, 1, 2	1, 2, 3, 4	4, 1, 2, 3	4, 1, 2, 3
	25.6	6.9												

Experts Ranking	3, 1, 2, 4	3, 1, 2, 4	2, 1, 3, 4	4, 3, 1, 2	3, 1, 2, 4	4, 2, 1, 3	2, 1, 3, 4	4, 3, 1, 2	4, 3, 1, 2	1, 2, 3, 4	4, 2, 1, 3	4, 3, 1, 2

Question 13	Question 14	Question 15	Question 16	Question 17	Question 18	Question 19	Question 20	Question 21	Question 22	Question 23	Question 24	Question 25
4, 3, 2, 1	2, 1, 3, 4	3, 1, 2, 4	4, 3, 1, 2	4, 1, 2, 3	4, 3, 1, 2	4, 3, 2, 1	4, 3, 1, 2	4, 3, 2, 1	4, 2, 1, 3	4, 2, 1, 3	4, 3, 2, 1	4, 3, 2, 1
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4, 3, 2, 1	1, 2, 3, 4	1, 2, 3, 4	4, 3, 1, 2	4, 1, 2, 3	4, 1, 2, 3	4, 3, 2, 1	4, 3, 1, 2	4, 3, 2, 1	4, 3, 1, 2	4, 3, 2, 1	4, 3, 2, 1	4, 3, 2, 1

Experts Ranking	4, 3, 2, 1	3, 1, 2,4	3, 1, 2, 4	4, 2, 1, 3	3, 1, 2,4	4,3, 2, 1	4, 3, 2, 1	4, 3, 1, 2	4, 3, 2, 1	4, 3, 1, 2	4, 3, 2, 1	4, 3, 2, 1	4, 3, 2, 1

Question Clusters	Best Choice	2d Best	3d Best	4th Best
RQ # 1	Sup	Coach	Del	Dir
RQ # 2	Coach	Sup	Dir	Del
RQ #3	Dir	Coach	Sup	Del
RQ #4	Sup	Coach	Dir	Del