Evaluating Our Evaluations

Recognizing and Countering Performance Evaluation Pitfalls

Lt. Col. Lee A. Evans, PhD, U.S. Army
Lt. Col. G. Lee Robinson, PhD, U.S. Army

Selecting the right person for the right job at the right time is a persistent challenge faced by organizations. Performance evaluations are a fundamental component of selection processes, and their use in the Army is nearly as old as the service itself. Some early evaluation systems consisted of a list of officers in a regiment with observations noted for each ranging from "a good-natured man" to "merely good—nothing promising" to "a man of whom all unite in speaking ill."[1] While our current evaluation form adds a bit more science to the art of performance evaluation, a constant in the Army's performance evaluation system is the reliance on raters to render their judgment on the potential of a subordinate for service at higher levels.

Raters need to be better equipped to exercise these judgments. While we recognize the calls for personnel management reform and the initiatives underway to better manage the Army's talent, our purpose is not to add another voice to these suggestions for structural changes to the Army's evaluation system.[2] Instead, we focus on the process of discretionary judgment exercised by raters that is and will continue to be an integral part of performance evaluation. Our aim is to recognize the structural and cognitive biases inherent in our evaluation system and provide recommendations to help senior raters more objectively evaluate their subordinates.

While we think the importance of this topic is self-evident, educating raters on the potential for bias in their evaluations is especially important in the type of rating system used by the Army. This system places great emphasis on the person serving as the senior rater. Although the evaluation forms include assessments from raters and sometimes intermediate raters, the senior rater comments are widely acknowledged to carry the most weight for promotion and selection decisions due to the small amount of time available to evaluate a soldier's file.[3] Most positions involve work that is highly interdependent on other members of the organization, which places a considerable demand on raters to assess and articulate how much an individual contributed to the output of the group.[4]

While the performance of an officer is undoubtedly important to his or her chances for promotion or selection, the abilities of the officer's senior rater to convey the level of this performance through an evaluation is also vital to talent management. Previous studies demonstrate that exposure to a high-quality mentor increases

Lt. Col. Lee A. Evans, PhD, U.S. Army, is an assistant professor and associate program director in the Department of Mathematical Sciences at the United States Military Academy (USMA). He holds a BS in engineering management from USMA, an MS in operations research from the Georgia Institute of Technology, and a PhD in industrial engineering from the University of Louisville.

Lt. Col. G. Lee Robinson, PhD, U.S. Army, is commander of the 603rd Aviation Support Battalion at Hunter Army Airfield in Savannah, Georgia. He holds a BS in international relations from the United States Military Academy, an MPA from Cornell University, and a PhD in public administration from the University of Georgia.

an officer's likelihood of an early promotion to major by 29 percent, perhaps because high-quality mentors are skilled at communicating their protégé's potential in their performance evaluations.[5] Equipping raters to make their best possible judgments of subordinates and clearly articulating these judgments is vital to fostering a meritocratic Army talent management system.

Evaluating the Performance Evaluation Tool: Structural Biases in the Department of the Army Form 67

In 1922, the Army introduced a formalized performance appraisal system, the War Department Adjutant General's Office (WD AGO) Form 711, *Efficiency Report*, rebranded two years later as the WD AGO Form 67, to assess officers in the domains of physical qualities, intelligence, leadership, personal qualities, and general value to the service.[6] Since 1922, the Army modified DA Form 67 ten times; the most recent iteration was the DA Form 67-10 series (hereafter referred to collectively as DA Form 67-10).[7] Each iteration of the officer evaluation form contained nuanced approaches to segment the population in order to accurately represent the spectrum of officer performances from the highest performing officers to those who should not be retained in the service. DA Form 67-10 uses a forced distribution technique where senior raters of lieutenant colonels and below can award "most qualified" evaluations to fewer than half of their subordinates. (For comparison, an example of the 1934 efficiency report format is shown on pages 94–95 to highlight the perennial challenges the Army has faced over time in capturing and expressing an effective and fair means of comparing the performances of officers.) Forced distribution rating systems have been common in the Department of Defense and the civilian sector because of the problem of appraisal distortion in the absence of forced distribution.[8] For example, prior to implementing a forced distribution performance appraisal system, the U.S. Navy saw the majority of its officers rated in the top 1 percent.[9] In theory, forced distribution decreases ratings inflation and provides the means for a variety of human resources decisions, including promotion, training, and assignment of personnel.

However, even under a best-case scenario (with the absence of cognitive biases), system structure induces error in a forced distribution performance appraisal system. Allan Mohrman alluded to this problem in his argument that forced distribution systems should be applied to large enough groups of employees, specifically over fifty.[10] While he failed to provide mathematical support for this number, his argument relies on the statistical qualities of large sample sizes. For example, if a reasonably large sample, typically $n > 30$, is drawn from a population with a normal distribution, the sample mean and the standard deviation of the sample are nearly indistinguishable from that of the population.[11] In the context of officer performance and potential, assuming both are normally distributed, this suggests that larger samples of officers will provide a more accurate representation of performance levels across the force. While larger samples are typically a good representation of performance level distribution, they are in direct conflict with the concept of pooling introduced by Army Regulation (AR) 623-3, *Evaluation Reporting System*.

AR 623-3 defines pooling as "elevating the rating chain beyond the senior rater's ability to have adequate knowledge of each Soldier's performance and potential, in order to provide an elevated assessment protection for a specific group."[12] The word "pooling" appears more than ten times in the most recent version of AR 623-3, which states that pooling runs counter to the intent of the evaluation system and erodes soldiers' confidence in the fairness and impartiality of their leaders.[13]

Creating a rating scheme that minimizes the number of subordinates under each rater ideally allows raters to have an intimate knowledge of the strengths and weaknesses of the soldiers they rate. The idea of an organizational structure that limits the number of subordinates under a rater's span of control is also a common practice in the civilian sector. The manager-to-employee ratio across industries worldwide is approximately 1:4 for companies with five hundred or fewer employees and 1:9 for companies with greater than five hundred employees.[14]

While there are many sound reasons that the Army seeks to decrease a rater's span of control, an often overlooked downside of this practice is the presence of errors resulting from a forced distribution system, especially in small rating pools. According to AR 623-3, a senior rater should award "most qualified" evaluations to the top one-third of officers, and the number of "most qualified" evaluations they award must be less than 50 percent of the total number of evaluations he or she writes.

With a few simplifying assumptions, such as officers distributed randomly into rating pools of five

and the raters having perfect clarity on whether a subordinate is a top one-third officer, the hypergeometric distribution (as explained below) provides insight into the mathematical pitfalls of a forced distribution performance appraisal system.

The hypergeometric distribution has three parameters: N, R, and n. The parameter N represents the number of items in the population, R represents the number of "successes," and n is the sample size drawn from the population. Using this nomenclature, we can determine that the random variable is $X \sim Hypergeometric(N, R, n)$ and calculate the probability that X (in our case, the number of "most qualified" officers in a rating pool) takes on particular, discrete values.

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For example, if there are five thousand officers of a particular rank, 1,667 of them would be considered the top one-third based on established criteria. We can calculate the probability of receiving exactly x top one-third officers in a group of n size. If we assume a pool size of five officers, we would use $X \sim Hypergeometric(5000, 1667, 5)$ to calculate the probability that we receive exactly x top one-third officers in our rating pool, notationally $P(X = x)$. That is, $P(X = 2)$ represents the probability that exactly two top one-third officers were assigned to a rating pool of five. In fact, $P(X = 2) = 0.329$, meaning there is a 32.9 percent chance that there would be exactly two top one-third officers in a rating pool of five, assuming officers are randomly distributed into ratings pools. Thus, given the current profile constraint of less than 50 percent, raters could only award two "most qualified" evaluations to a pool of five officers.

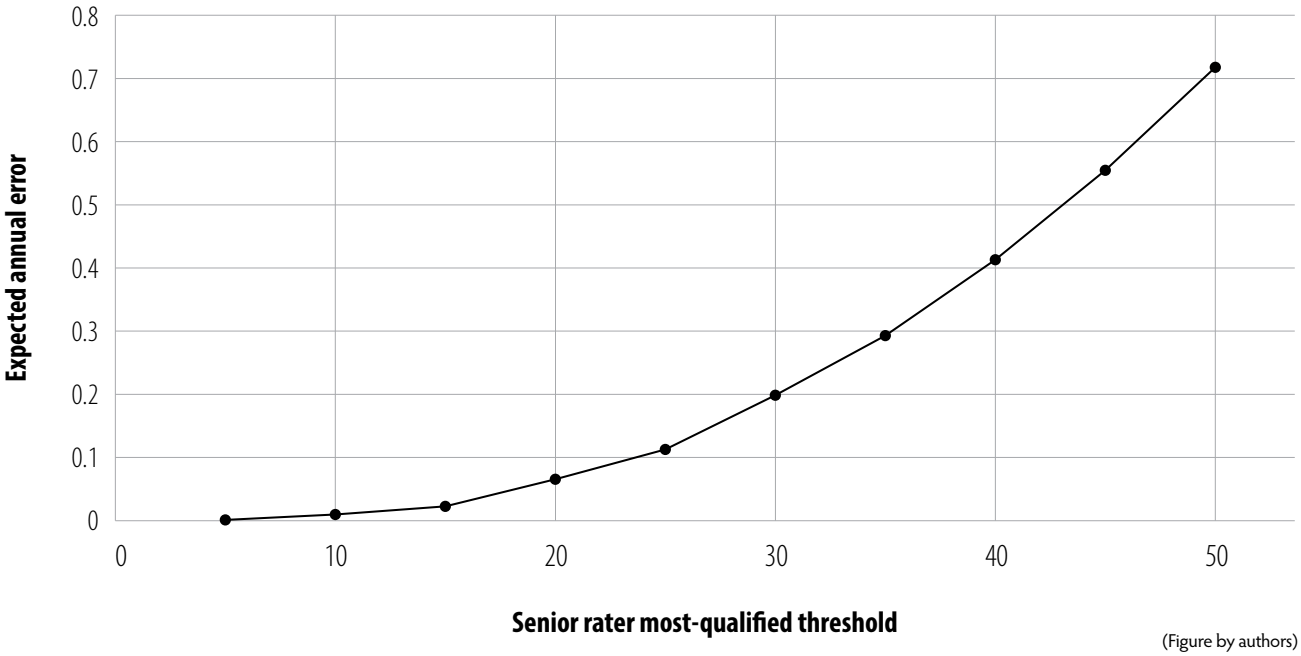
The rater's ability to discern the two top one-third performers is affected by cognitive biases, but mathematically, the rater may be obligated to award an evaluation that is not commensurate with a subordinate's level of performance due to forced distribution requirements. For example, if a rater has a pool size of five, but has more than two top one-third performers, at least one rated officer will receive an inaccurate evaluation due to the rater's profile constraint. We can calculate this expected annual error with $E[Annual\ Error]$. Notationally, for a rating pool of five officers, this is represented by $E[Annual\ Error] = \sum_{i=3}^{5} (i - 2) P(X = i) = P(X = 3) + 2P(X = 4) + 3P(X = 5)$. That is, when there are three top one-third officers in a rating pool of five, one officer is adversely affected by the profile constraint. When there are four top one-third officers, two officers are affected by the profile constraint. When all five officers are top one-third officers, three officers are affected by the profile constraint.

An $E[Annual\ Error] = 0.259$ means that for each rating pool of five officers, 0.259 (or about one officer per rating pool every four years) would not receive the top evaluation they deserved. If five thousand officers are randomly placed into pools of five, even under conditions of perfect clarity of the rater to discern performance level and follow the guidance in AR 623-3 to reserve "most qualified" evaluations for the top one-third officers, we would expect that 259 officers per year do not receive the evaluation they deserve.

Addressing Structural Biases

We suggest three ways to counter structural biases. First, senior raters should follow the guidance in AR 623-3 and reserve "most qualified" evaluations for the top one-third officers. This requires a discerning eye, and as previously mentioned, will result in an expected annual error of about one officer per rating pool every four years for a rating pool of five officers. According to the U.S. Army Human Resources Command, "the limitation of less than 50% translates to an average use of 37–42% depending on the grade (of the rated officer)."[15] Within this relatively small range, there is a significant difference in the expected annual error.

If a senior rater uses the top 37 percent of officers as the cutoff for most "qualified" evaluations, it would result in an expected annual error of 0.340 whereas a 42



(Figure by authors)

Figure 1. Expected Annual Error as a Function of a Senior Rater's "Most Qualified" Threshold

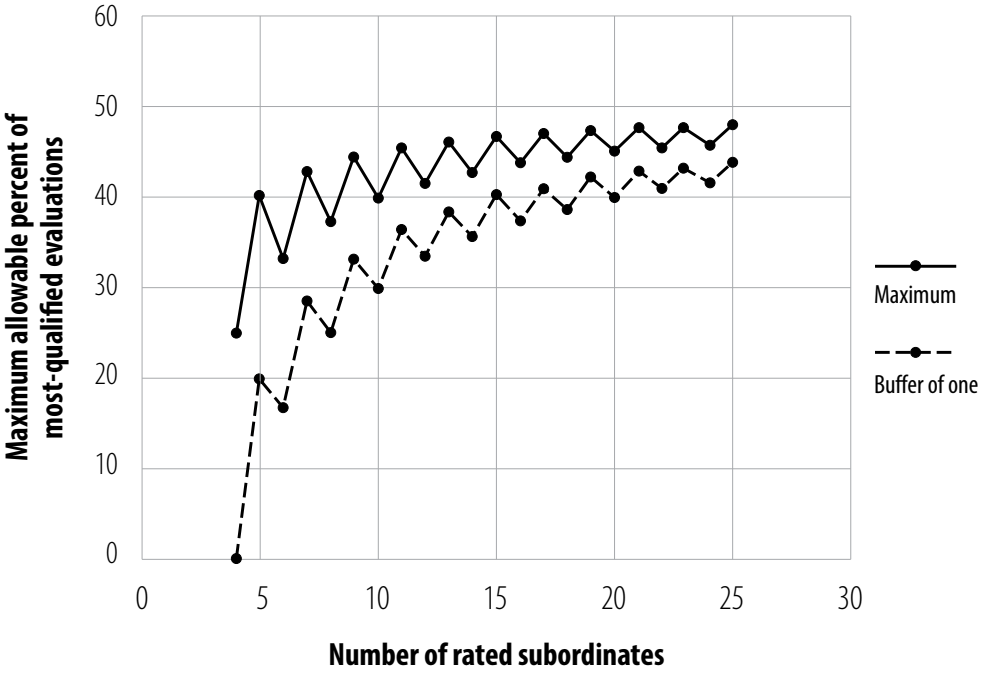
percent threshold increases the expected annual error to 0.469. As seen in figure 1, higher thresholds for what percentage of officers should receive a "most qualified" evaluation result in monotonically higher than expected annual errors. However, senior raters who place these thresholds below those of other raters disadvantage some of their subordinates who would have received "most qualified" evaluations in other rating pools. Therefore, a senior rater would want to award a similar percentage of "most qualified" evaluations as other senior raters across the Army to ensure his or her subordinates are not disadvantaged but low enough to prevent instances where the number of "most qualified" officers within their rating pools exceeds the profile constraint.

Second, we recommend senior raters have a multiyear focus and refrain from maximizing the number of "most qualified" evaluations awarded each year. The U.S. Human Resources Command stated that the 37–42 percent use of "most qualified" evaluations by senior raters is "indicative of senior raters correctly retaining a buffer."[16] This guidance assumes that anything less than 50 percent constitutes a buffer. However, figure 2 (on page 93) shows that the maximum allowable percentage of "most qualified" evaluations does not remain above 42 percent until a senior rater completes twenty-five evaluations. For example, if a senior rater completes eight evaluations, at most, three of them can be "most qualified" evaluations, putting the senior rater profile usage at 37.5 percent. If the senior rater kept a buffer of just one evaluation, the profile usage drops to 25 percent.

Maximizing the number of "most qualified" evaluations awarded often results in either a Type I or Type II error. In the context of performance appraisals, a Type I error is incorrectly identifying an officer as most qualified, whereas Type II error is not identifying a most qualified officer as such. If a senior rater has a rating pool of five officers and is predetermined to award the maximum of two top evaluations, there is only a 34.6 percent chance that there are exactly two top 40 percent officers in a pool of randomly distributed officers. There is a 33.7 percent chance that there are fewer than two top 40 percent officers, leading to a Type I error, and a 31.7 percent chance there are more than two top 40 percent officers, leading to a Type II error. A senior rater's profile constraint can

induce a Type II error, but a Type I error is caused by either cognitive biases or conscious decisions.

A conscious decision to award a "most qualified" evaluation to an undeserving officer can have compounding effects since rating profiles are cumulative. We analyze this effect by calculating the expected two-year error. If a senior rater plans to maximize the number of "most qualified" evaluations awarded, presumably off of a top 40 percent standard, it will result in an expected annual error of 0.415 and an expected two-year error of 0.830 for a pool size of five. However, if a senior rater can use the top one-third standard for awarding "most qualified" evaluations, there will be an expected annual error of 0.259 and an expected two-year error of 0.416.



(Figure by authors)

Figure 2. Profile Usage for Senior Raters Who Maximize Their "Most Qualified" Evaluations and Those Who Keep a Buffer of One

The reason that the expected two-year error is not double that of the expected annual error is that if there is only one top one-third officer in the rating pool the first year, the senior rater can award up to three "most qualified" evaluations the second year. Similarly, if there are no top one-third officers in the rating pool the first year, a senior rater can award up to four "most qualified" evaluations the second year. In summary, by resisting the urge to award the maximum allowable number of top evaluations each year and maintaining a top one-third standard, senior raters can reduce Type II errors by nearly 50 percent. Consequently, coaching officers to have a multiyear focus is especially important since recent research shows how an officer's seniority affects the evaluations they receive in the evaluation process.[17]

Third, consistent with AR 623-3, we recommend that senior raters structure rating schemes to provide flexibility to reward the best subordinates. When discussing the establishment of rating chains, AR 623-3 provides general guidance, such as commanders rating commanders, and prohibits the practice of pooling. However, it gives organizations the latitude to establish and publish their rating scheme at the beginning of each period. While the recommended size of rating pools cannot be generalized across nonhomogeneous units, organizations should establish rating chains that do not disadvantage officers at each grade level.

For example, increasing our sample rating pool of five officers to ten officers decreases both the expected annual error and the expected annual two-year error. As previously stated, using the criteria of top one-third officers deserving "most qualified" evaluations, the expected annual error for a pool size of five is 0.259 and the expected two-year error is 0.416. Doubling the size

(USE TYPEWRITER IF POSSIBLE. IF NOT, PRINT PROPER NAMES)

EFFICIENCY REPORT

(SEE AR 600-185)

A. OFFICER REPORTED UPON Fissell, John T. (Name-last-first) 0746842 (Serial No.) Lt. Col. (Grade) 100th Infantry (Organization)

A's official status with respect to you Bn. Commander in my Regiment.

B. PERIOD COVERED BY THIS REPORT 7 22/30 months, from November 9, 1942 to June 30, 1943

C. STATIONS AT WHICH HE SERVED Fort Dix, New Jersey

D. CONSIDER CAREFULLY THESE DEFINITIONS, KEEP THEM IN MIND WHEN RATING, TAKING INTO CONSIDERATION HIS LENGTH OF SERVICE AND THE OPPORTUNITIES AFFORDED HIM, WHICH MIGHT HAVE A BEARING UPON HIS PERFORMANCE OF DUTY, PERSONAL CHARACTERISTICS, OR PROFESSIONAL QUALIFICATIONS.

UNSATISFACTORY: Performance of the particular duty reported upon or personal characteristics or professional qualifications below minimum standard—inefficient.

SATISFACTORY: Performance of the particular duty reported upon or personal characteristics or professional qualifications up to minimum standard—passably efficient.

VERY SATISFACTORY: Performance of the particular duty reported upon in an efficient manner. Personal characteristics, professional qualifications, or efficiency above that acceptable as **SATISFACTORY.**

EXCELLENT: Performance of the particular duty reported upon in a very efficient manner. Personal characteristics, professional qualifications, or efficiency above **VERY SATISFACTORY** but below **SUPERIOR.**

SUPERIOR: Outstanding and exceptional performance of the particular duty reported upon. Personal characteristics, professional qualifications, or efficiency above that considered **EXCELLENT.**

UNKNOWN: To be used in all cases in which the reporting officer has had insufficient opportunity during the period covered by this report to observe the officer reported upon to permit a rating as to the performance of the particular duty, his personal characteristics, or professional qualifications.

E. DUTIES HE PERFORMED: (State separately. Where possible show duration of each in months. Example: Co. Comdr. ordinary garrison training, 8 mos. Summary court, 6 mos. Brig. Adj. prepared training schedules, Supply Officer.) In describing the manner of performance of duty, use one of six classifications as given under D, and consider carefully the obstacles encountered by the individual in the performance of each duty listed. **THE OPINIONS EXPRESSED UNDER "MANNER OF PERFORMANCE" ARE BASED ON—**

INTIMATE DAILY CONTACT,
FREQUENT OR INFREQUENT OBSERVATION OF THE RESULTS OF HIS WORK,
ACADEMIC RATINGS.

(Line out inappropriate words or amplify under par. P according to circumstances)

RESERVE (In red ½ inch letters)

Duty	Months	Manner of performance
Bn. Commander, 3rd Bn., 100th Inf. (Prin duty)	7 20/30	Excellent
Sick in hospital	2/30	

F. What degree of success has he attained under the following headings: ENTRIES BASED ON PERSONAL OBSERVATION OR OFFICIAL REPORTS DURING PERIOD COVERED BY THIS REPORT. (See par. D above.)	Unsatisfactory	Satisfactory	Very satisfactory	Excellent	Superior	Unknown
1. Handling officers and men					X	
2. Performance of field duties				X		
3. Administrative and executive duties				X		
4. As an instructor				X		
5. Training troops				X		
6. Tactical handling of troops (units appropriate to officer's grade)				X		

G. Enter on lines below any outstanding specialties of value in the military service. **MAKE NO ENTRIES EXCEPT WHERE STATEMENT IS BASED ON PERSONAL OBSERVATION OR OFFICIAL REPORTS DURING PERIOD COVERED BY THIS REPORT.** Show pilot and/or observer ratings of Air Corps officers here.

H. To what degree has he exhibited the following qualifications? Consider him in comparison with others of his grade and indicate your estimate by marking X in the appropriate rectangle. (See par. D above.)	Unsatisfactory	Satisfactory	Very satisfactory	Excellent	Superior	Unknown
1. Physical activity (agility; ability to work rapidly)						
2. Physical endurance (capacity for prolonged exertion)						
3. Military bearing and neatness (dignity of demeanor; neat and smart appearance)						
4. Attention to duty (the trait of working thoroughly and conscientiously)						
5. Cooperation (acting jointly and effectively with another or others, military or civilian, to attain a designated objective)						
6. Initiative (the trait of beginning needed work or taking appropriate action on his own responsibility in absence of orders)						
7. Intelligence (the ability to understand readily new ideas or instructions)						
8. Force (the faculty of carrying out with energy and resolution that which on examination is believed reasonable, right, or duty)						
9. Judgment and common sense (the ability to think clearly and arrive at logical conclusions)						
10. Leadership (capacity to direct, control, and influence others in definite lines of action or movement and still maintain high morale)					X	

W. D., A. G. O. Form No. 67—July 1, 1936. 3—6308

① Front.

FIGURE 35.

(Form published in Technical Manual 12-250, *Administration*, 10 February 1942)

Sample of U.S. Army Efficiency Report from 1936

Name of officer reported on Fissell, John T. Name of reporting officer Atwater, John O.

I. During the period covered by this report has he taken advantage of the opportunities afforded him to improve his professional knowledge?

J. Has he exhibited any weaknesses—temperamental, moral, physical, etc.—which adversely affect his efficiency? If yes, describe them. (FACT or OPINION. Line out one.)

K. Proper authority having decided on the methods and procedure to accomplish a certain end, did he render willing and generous support regardless of his personal views in the matter?

✓L. Since last report has he been mentioned favorably or unfavorably in official communications? No. (See par. 1b, AR 600–185.)

✓M. During the period covered by this report was he the subject of any disciplinary measure that should be included on his record? No. If yes, enclose separate statement of nature and attendant circumstances.

✓N. Write a brief general estimate of this officer in your own words This officer has performed all duties in an excellent manner. He is loyal, exact and efficient, and has displayed initiative and ability in handling men. He is a well-informed officer, both in military and non-military subjects. In comparing this officer with all other officers of his grade and component known to me, I would place him among the upper third.

O. How well do you know him?

✓P. Remarks ([redacted])

RESERVE (In red ½ inch letters)

✓Q. In case any unfavorable entries have been made by you on this report, were the deficiencies indicated hereon brought to the attention of the officer concerned while under your command and *prior* to the rendition of this report? If yes, what improvement, if any, was noted? No unfavorable entries.

If no improvement was noted, what period of time elapsed between your notification to him of his deficiencies and the rendition of this report?

R. Based on your observation during the period covered by this report, give in your own words your estimate of his GENERAL VALUE TO THE SERVICE

✓S. I certify that to the best of my knowledge and belief all entries made hereon are true and impartial and are in accordance with AR 600–185.

NOTE: Initiated by reporting officer or rating officer. Only paragraphs checked (✓) are to be filled out. ONE COPY ONLY.

(Signed) John O Atwater
(Name typed) John O. Atwater
(Grade and Org.) Colonel, Infantry
(Comdg. what?) Comdg., 100th Infantry
(Place) Fort Dix, New Jersey
(Date) Jan. 22, 1942 Incls.

1st INDORSEMENT GW/ddb

Hq. 20th Inf. Div., Fort Dix, N.J., July 5, 1943. To: TAG

The officer reported upon is unknown to me, but I have confidence in the judgment, fairness of impartiality of the reporting officer.

/s/ Gregory Winslow
/t/ GREGORY WINSLOW
Major General, U.S. Army,
Commanding.

Write nothing below this line.

② Back.

FIGURE 35—Continued.

(Form published in Technical Manual 12-250, *Administration*, 10 February 1942)

Sample of U.S. Army Efficiency Report from 1936 (continued)

of the rating pool to ten officers while maintaining the top one-third most qualified officer threshold drops the expected two-year error to 0.364. Since the expected two-year error is for two years of officers in a pool size of ten, we can compare it to the expected two-year error for a pool size of five by dividing by two. Doubling the rating pool size from five to ten thus results in a 56 percent decrease in Type II errors.

> The more bias we can divest from evaluations, the better positioned selection boards will be to make the difficult choices inherent in talent management of a large pool of candidates.

Evaluating the Evaluator: Cognitive Biases

As evidenced in the previous section, there are structural biases introduced by the DA Form 67-10 that make it difficult for raters to consistently reward the best officers. In addition to these structural biases, because of the discretionary nature of performance evaluation, there are also cognitive biases that may affect the judgment of senior raters. We focus on five cognitive biases that may lead to a difference between the performance of an officer and how this performance translates to the potential described by a senior rater in an evaluation report.

A cognitive bias occurs when a rater unknowingly renders judgments that are unrelated to an officer's performance. Because raters have great discretion in how they articulate the potential of an officer in an evaluation, cognitive biases have the potential to influence the enthusiasm they use to describe a soldier in the narrative portion of the report.

These choices are especially important because there is likely a small talent differential between officers just above and just below the cutline in promotion and selection boards. There is anecdotal evidence to support this point from officers who served on promotion boards, but we also see empirical support for small differences between primary and alternate selectees in other fields.[18] Since selection boards have little time to review files and consider a relatively minimal amount of information, reducing the effects of cognitive bias can make a difference in the identification and selection of officers with the greatest potential for service at higher levels.[19] Stated differently, the more bias we can divest from evaluations, the better positioned selection boards will be to make the difficult choices inherent in talent management of a large pool of candidates.

A key point on cognitive bias is that it is unintentional. Evaluating a person's performance is undoubtedly complex. How much of performance is due to a person's talent versus the interactive effects from the group? And how does their performance compare to their peers who faced similar tasks but did so under different conditions with different teammates? Psychologist Daniel Kahneman shaped much of what we understand about complex decision-making with his insights on System 1 and System 2 thinking. System 1 thinking normally guides our decisions as it operates automatically and enables us to make most decisions with little or no effort. When faced with more complex tasks, System 2 thinking enables us to focus our attention on more complex computations. While we like to think we can put System 2 in control when needed, Kahneman suggests that System 1 often takes over in the face of complexity.[20]

For instance, if asked what you think the president's popularity will be six months from now, what system would you use? Kahneman claims this is a System 2 task since an accurate answer would require a person to consider the events between present time and six months in the future that would potentially affect the president's popularity and render judgment on the likelihood of these events. Instead of performing these complex calculations, we rely on System 1 thinking, which would use the president's current popularity to gauge what his popularity will be six months from now.

A similar process unfolds for performance evaluation. To complete the difficult task of assessing someone's

performance, we use shortcuts that rely on information that is already stored in memory. The benefit of System 1 thinking is that it enables us to rely on intuition to perform such complex tasks, but the downside is that this process invites bias. Our System 1 thinking may succumb to the following five sources of bias when faced with the complexity of performance evaluation. The more we are aware of these biases, the better equipped we are to slow down our System 1 thinking and engage some System 2 functions to counter these biases.

Halo effects. As the name implies, halo effects occur when we use performance in one dimension to influence our evaluation of a person in all other dimensions. The primary problem of halo effects is that they decrease the number of opportunities for a person to demonstrate his proficiency, thereby precluding the rater from evaluating the ratee accurately across different dimensions of performance.[21] Raters are especially susceptible to halo effects in systems where a single evaluator rates a person on multiple dimensions—as is the case with our evaluation system and the Army leadership requirements model with its core competencies and attributes.[22]

The halo effect can be positive or negative. For example, an officer who performs well in the attribute of competence by projecting self-confidence and a commanding presence may enjoy a positive halo effect across the other competencies and attributes. Conversely, an officer who shows a lack of self-confidence and commanding presence may suffer a negative halo effect across the other competencies and attributes.

First impression error. This bias stems from initial impressions, either favorable or unfavorable, that influence a rater's evaluation. Similar to halo effects, the primary problem of initial impression error is that a rater may suppress or discount subsequent information about a ratee if it is counter to their initial impression.[23] This effect can be especially prevalent when a senior rater rates a large pool of a particular position or rank and has few interactions with each individual.

Similar to me effect. This bias stems from a tendency of some raters to judge a person favorably when he or she resembles the rater along dimensions such as his or her attitude or background.[24] Some recent studies indicate that the military may be especially susceptible to this bias in comparison to other professions. A study of Army War College students found that this population scored lower on openness than the general U.S. population.[25] A characteristic of people with low scores on openness is that they prefer familiarity over novelty; thus, lower scores for openness may be associated with less favorable judgments of ratees who are significantly different than the raters. Other studies indicate service academy cadets score lower on innovative cognitive style (which is positively correlated with a willingness to adopt new ideas) than students at comparable civilian universities, and those who left the academy after their first year scored higher on innovation than those who remained.[26]

A study of the relationship between cognitive ability and promotion/selection found that officers with significantly higher cognitive abilities had 29 percent lower odds of selection below the zone (ahead of peers) to major, 18 percent lower odds for selection below the zone to lieutenant colonel, and 32 percent lower odds for selection to battalion command.[27] One explanation for these results is that officers with high cognitive abilities may make "worse" junior officers since they may be less likely to be hypercompliant in comparison to those of average or lower cognitive ability. By this reasoning, the "similar to me effect" may contribute to these results.

Central tendency error. The central tendency error occurs when raters score most ratees as average or slightly above average.[28] Although there are four blocks on the officer evaluation report, raters rarely use the "qualified" or "not qualified" box. While there are consequences for a rater to "bust their profile" by scoring too many officers as "most qualified," there are no consequences for placing too many officers in the "highly qualified" category.

In situations where there are no consequences for too many average ratings, there is a greater potential for ratings inflation.[29] Qualified or not qualified ratings involve additional work for the rater in terms of greater potential for interpersonal conflict with the ratee or the requirement for performance counseling documents if the rated officer appeals the evaluation. Since no consequences exist for establishing gradations in the quality of performance for those who are not "most qualified," it is easier to rate someone as "highly qualified" than to use the lower two rankings. While our professional ethos is a check against this bias, we include it in this discussion since the potential exists for this bias.

Duration neglect. The essence of duration neglect is the tendency to place greater emphasis on peak time periods and recency when recalling events. To illustrate this effect, Kahneman discussed

a study of how patients recalled a colonoscopy. While the duration of the procedure had no effect on the patients' ratings of total pain, the average level of pain at the worst moment of the procedure and at the end of the procedure were strong predictors of the overall evaluation of pain.

Hopefully, pain is not an emotion that raters recall during an evaluation, but the general principle applies for how this bias may influence evaluations. Instead of engaging System 2 processes to consider the performance of a ratee over a series of events, it is easier to use a key event such as an inspection, a training exercise, or the most recent training event to shape the impression a senior rater wishes to convey in an evaluation.

Addressing Cognitive Biases

We suggest three ways to counter these cognitive biases. Reading this article and becoming aware of countering sources of cognitive bias is the first step. While we hope that readers will find this information helpful, we think it is especially important to include education on these biases as part of professional military education. While professional military education courses often cover board processes and trends, they do not currently include training on these biases. We think that just as future battalion and brigade commanders receive training on managing their profile, they should receive training on rater biases to become better evaluators.

Second, since the source of these biases is a system that relies on evaluations by a single rater, we recommend that raters seek input from different sources to help form their judgment of a ratee. One of the authors has experience with this technique while serving as a battalion executive officer. The battalion commander asked the operations officer, command sergeant major, senior chief warrant officer, and the author to rank the six company commanders. After submitting the feedback, the author compared his recommendations with those of the operations officer and found that his ratings were the opposite for the six commanders. While differences of opinion will probably not always be this stark, there is value in raters receiving a diversity of opinions to counter possible sources of cognitive bias.

Third, frequent feedback to subordinates can help counter bias, especially if a rater is aware of the potential biases discussed above. Frequent feedback can foster agreement on performance standards and increase acceptance of feedback by subordinates.[30] This is an area that many leaders struggle with. In the *2016 Center for Army Leadership Annual Survey of Army Leadership*, over one-third of respondents reported their supervisors rarely or never took time to discuss how they were doing with their work and what they could do to improve their performance.[31]

Conclusion

In reality, the Army's performance appraisal system is a multiyear assessment that is prone to disparities between senior raters and the profiles they maintain. As this article demonstrates, there are structural and cognitive biases that may affect the rating an officer receives. These biases undermine the meritocratic principles that we seek in our performance evaluation system. The more that we are aware of these biases, the better position we will be in to counter their effects. ■

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Notes

1. David P. Kite, "The U.S. Army Officer Evaluation Report: Why are We Writing to Someone Who Isn't Reading?" (master's thesis, Air Command and Staff College, 1998), 8, accessed 17 September 2019, https://apps.dtic.mil/dtic/tr/fulltext/u2/a398598.pdf.

2. For examples of reform efforts, see *Building a F.A.S.T. Force: A Flexible Personnel System for a Modern Military Recommendations from the Task Force on Defense Personnel* (Washington, DC: Bipartisan Policy Center, March 2017), accessed 17 September 2019, https://bluestarfam.org/wp-content/uploads/2017/04/BPC-Defense-Building-A-FAST-Force.pdf; Susan Bryant and Heidi A. Urben, "Reconnecting Athens and Sparta: A Review of OPMS XXI at 20 Years" (Arlington, VA: The Institute of Land Warfare, Association of the United States Army, October 2017), accessed 17 September 2019, https://www.ausa.org/publications/reconnecting-athens-and-sparta-review-opms-xxi-20-years; for an example

of the efforts of the U.S. Army Talent Management Task Force, see Brian Hamilton, "Talent Management Enhances Total Force Readiness," U.S. Army Talent Management Task Force, accessed 17 September 2019, https://talent.army.mil/talent-management-enhances-total-force-readiness/.

3. *Officer Mock Board Video*, YouTube video, 47:06, posted by "ARMYHRC," 15 Febuary 2017, accessed 17 September 2019, https://www.youtube.com/watch?v=zeqGrAUMMiY.

4. Kevin R. Murphy and Jeanette N. Cleveland, *Understanding Performance Appraisal: Social, Organizational, and Goal-Based Perspectives* (Thousand Oaks, CA: Sage, 1995).

5. David S. Lyle and John Z. Smith, "The Effect of High-Performing Mentors on Junior Officer Promotion in the US Army," *Journal of Labor Economics* 32, no. 2 (April 2004): 229–58.

6. Allan C. Hardy and Keith B. Harker, "U.S. Army Officer Perceptions of the New OER (DA Form 67-8)" (master's thesis, Naval Postgraduate School, 1982), 20–21, accessed 2 October 2019, https://apps.dtic.mil/dtic/tr/fulltext/u2/a126773.pdf.

7. Army Regulation (AR) 623-3, *Evaluation Reporting System* (Washington, DC: U.S. Government Publishing Office, 2019), accessed 17 September 2019, https://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docid=4ab544f9-841b-45df-9650-2b2751187003.

8. E. Donald Sisson, "Forced Choice—The New Army Rating," *Personnel Psychology* 1, no. 3 (September 1948): 365–81.

9. David G. Bjerke et al., *Officer Fitness Report Evaluation Study* (San Diego: Navy Personnel Research and Development Center, 1987), accessed 17 September 2019, https://apps.dtic.mil/dtic/tr/fulltext/u2/a189377.pdf.

10. Allan M. Mohrman Jr. et al., *Designing Performance Appraisal Systems: Aligning Appraisals and Organizational Realities* (San Francisco: Jossey-Bass, 1989).

11. William C. Navidi, *Statistics for Scientists and Engineers* (New York: McGraw-Hill, 2014).

12. AR 623-3, *Evaluation Reporting System*, 7.

13. Ibid.

14. Barbara Davison, "Management Span of Control: How Wide is too Wide?," *Journal of Business Strategy* 24, no. 4 (1 August 2003): 22–29.

15. "OER FAQs," The Adjutant General Directorate (TAGD), United States Human Resources Command, 6 June 2019, accessed 17 September 2019, https://www.hrc.army.mil/content/OER%20FAQs.

16. Ibid.

17. Lee A. Evans and Ki-Hwan G. Bae, "Simulation-Based Analysis of a Forced Distribution Performance Appraisal System," *Journal of Defense Analytics and Logistics* 1, no. 2 (2017): 120–36.

18. Richard A. DeVaul et al., "Medical School Performance of Initially Rejected Students," *JAMA* 257, no. 1 (January 1987): 47–51.

19. Adam L. Taliaferro, "Understanding the Army Selection-Board Process," *eARMOR* (April-June 2015), accessed 17 September 2019, http://www.benning.army.mil/armor/eARMOR/content/issues/2015/APR_JUN/2ArmorBranchUpdate15.pdf.

20. Daniel Kahneman, *Thinking, Fast and Slow*, 1st ed. (New York: Farrar, Straus, and Giroux, 2011).

21. Timo M. Bechger, Gunter Maris, and Ya Ping Hsiao, "Detecting Halo Effects in Performance-Based Examinations," *Applied Psychological Measurement* 34, no. 8 (2010): 607–19.

22. Emily R. Lai, Edward W. Wolfe, and Daisy H. Vickers, "Differentiation of Illusory and True Halo in Writing Scores," *Educational and Psychological Measurement* 75, no. 1 (2015): 102–25. For a description of the core competencies and attributes of the leader development model, see Army Doctrine Reference Publication 6-22, *Army Leadership* (Washington, DC: U.S. Government Printing Office, August 2012 [obsolete]), 1-5, accessed 17 September 2019, http://data.cape.army.mil/web/repository/doctrine/adrp6-22.pdf.

23. J. Edward Kellough, "Managing Human Resources to Improve Organizational Productivity: The Role of Performance Evaluation," in *Public Personnel Management: Current Concerns, Future Challenges*, ed. Norma M. Riccucci, 5th ed. (Boston: Longman, 2012), 173–85.

24. Gary P. Latham and Kenneth N. Wexley, *Increasing Productivity Through Performance Appraisal*, 2nd ed. (Reading, MA: Addison-Wesley, 1994).

25. Stephen J. Gerras and Leonard Wong, *Changing Minds in the Army: Why Is It so Difficult and What to Do about It* (Carlisle, PA: U.S. Army War College Press, October 2013), accessed 17 September 2019, https://ssi.armywarcollege.edu/pdffiles/PUB1179.pdf.

26. Tom Mitchell and Alice M. Cahill, "Cognitive Style and Plebe Turnover at the U.S. Naval Academy," *Perceptual and Motor Skills* 101, no. 1 (August 2005): 55–62.

27. Everett S. P. Spain, J. D. Mohundro, and Bernard B. Banks, "Intellectual Capital: A Case for Culture Change," *Parameters* 45, no. 2 (Summer 2015): 77–92.

28. Kellough, "Managing Human Resources to Improve Organizational Productivity."

29. Murphy and Cleveland, *Understanding Performance Appraisal*.

30. Ibid.

31. Ryan P. Riley et al., *2016 Center for Army Leadership Annual Survey of Army Leadership (CASAL): Military Leader Findings* (Fort Leavenworth, KS: The Center for Army Leadership, U.S. Army Combined Arms Center, August 2017), accessed 17 September 2019, https://usacac.army.mil/sites/default/files/documents/cal/2016CASALMilitaryLeaderTechnicalReport.pdf.