# Universal Leadership Behaviors and the Occupational Information Network's Generalized Work Activities

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*Recent leadership literature suggests that there is a growing trend to explore the idea of identifying universally accepted leadership behaviors. Before common leadership behaviors can be identified a standardized set of descriptors must be utilized. This study looks at the potential role of the U.S. Department of Labor's Occupational Information Network (O\*NET) in defining these universally accepted leadership behaviors.*

Keyword: Leadership, Occupational Information Network, Job Analysis

After 60 years of theory building as to what constitutes leadership there is still no clear cut answer. Organizations have realized that there is a need for leadership skills within their managers. To make managers more effective in their jobs, organizations need to train individuals in the leadership. However, to date there is no codified list of work activities that makeup the dimensions of leadership.

## Problem, Purpose, and Significance

In the last six years the United Sates Department of Labor has released the Occupational Information Network (O\*NET). The O\*NET is a comprehensive occupational information system that coalesces the last 60 years of psychological and industrial research in organizational studies. The O\*NET consists of a job content model with over 400 variables used to define a job and an active online database of over 1000 jobs profiled using the model. As part of the 400 variables, the O\*NET has developed a list of 42 Generalized Work Activities (GWA) that are general statements regarding work behaviors. These GWAs can be used to describe similarities and differences between two differing positions. One of the fundamental problems of trying to describe two different positions is that there is no effective way of doing an across-job comparison without some form of standardization in the work descriptions (Peterson, Mumford, Borman, Jeanneret, & Fleishman, 1999). In this case, leaders can be in any position at any level of the organization; trying to compare one leader to another would be impossible without some way of generalizing the work that they do.

The O\*NET has also defined Leadership as the following four dimensions: consideration, task-orientation, visionary, and problem solving (Peterson, et al., 1999). The O\*NET uses these dimensions to describe characteristics of general occupations. What the O\*NET does not currently do is classify characteristics of leadership within specific positions. Without this knowledge, comparing leaders across job positions is difficult. Using the O\*NET's 42 Generalized Work Activities an across-job comparison of leaders can be done. However, the problem is that until it has been determined what GWAs best represent leadership and how important each GWA is to being a successful leader, an across-job comparison regarding leadership would be impossible. Therefore, the purpose of this study is to explore the O\*NET's potential role in defining these universalistic leadership behaviors.

The potential significance of studying universal leadership behaviors could be numerous. From an organizational standpoint the advantages of a codified list of leadership work activities are plentiful. A list of leadership work activities could be used to develop and/or improve training programs, hiring procedures, pay scales, and promotion systems. Organizations could both hire and promote individuals with strong sets of leadership competencies. This may cut cost and improve organizational productivity and efficiency. From a research stand point, this study could provide the building block for new leadership theory or improvements on current leadership theory. The results of this study could help to unify researchers as to their definition of what constitutes leadership. Finally, although the O\*NET was developed from 60 years worth of research in organizational studies, it is still a fledgling database which needs to be rigorously tested. One of the fundamental assumptions of the O\*NET is that it

is capable of cross referencing different information from one O*NET database to another. The results of this study could provide evidence to support the O*NET's ability to cross reference the GWAs and dimensions of leadership.

**Theoretical Framework**

The theoretical framework used for this study is one which is bounded in a post-positivistic epistemology. In fact, the entire notion of a universal construct is grounded by the assumption that there is but one true reality and that we as researchers can estimate or approximate that one reality. This study will use the O*NET as its dominant frame of reference when attempting to describe potentially universalistic leadership behaviors. By using the GWA and leadership frameworks as defined by the O*NET, the results of this study can potentially add to both the developing body of knowledge regarding the O*NET and the already well established leadership literature. Thus, given that this study's theoretical framework relies on O*NET defined information, it is integral that a detailed discussion regarding the history and background of the O*NET be presented. Additionally, as this study relies nearly entirely on the GWA and leadership constructions of the O*NET, limited outside work on these topics will be presented. By limiting the outside knowledge regarding GWA and leadership constructions a more thorough examination of the O*NETs ability to describe these across-job comparisons can be done.

*History of the Occupational Information Network*

Until approximately 1997, the Dictionary of Occupational Titles (DOT) was used as the U.S. government's primary occupational analysis tool. The DOT was developed in the 1930s and 1940s to help combat the great depression (Peterson, Mumford, Borman, Jeanneret, Fleishman, Levin, et al., 2001). The DOT listed 12,000+ different occupations; for every new job a new classification was needed, and every new classification meant researchers would need to perform job analysis on that position. In addition, the DOT was developing when the labor force was predominantly product-oriented. According to Peterson, et al. (1999), "The DOT descriptions assume a Tayloristic worldview that is becoming increasingly obsolete" (p.11).

After 60 years of use, in the late 1980's the U.S. Department of Labor (DOL) realized that there were many problems with the DOT. The labor market was changing; the world of work was becoming a global marketplace with high technology and increased demands on worker skills. The DOT was not able to keep up with these growing trends in America. To stay globally competitive, Americans were going to need a labor market information system that could change and develop with the times. By 1997, DOL researchers had developed a prototype that seemed to be able to do what the DOT could not. It was named the Occupational Information Network (O*NET).

The O*NET was developed as a comprehensive system that public and private organizations could use to: conduct job analyses, identify salary/benefits, identify training needs, identify educational development opportunities, improve staffing, and so on. What was developed in the O*NET was a workforce language, a language that could be used to communicate between individuals and organizations (Mariani, 1999). The O*NET identifies the basic knowledge, skills, and abilities (KSA) of workers and jobs, and then cross references these. It also identifies Generalized Work Activities (GWA) that are transferable from job-to-job. Due to its unique language the O*NET is able to use these GWAs to cross reference nearly all jobs and all workers.

*Content Domains and Generalized Work Activities*

Within the occupational requirements domain, the O*NET discusses the idea of a GWA. In 1979, Ernest McCormick made a significant contribution to research in job analysis, when he discovered that jobs can be described using two different classifications: job-oriented and worker-oriented. When using a job-oriented approach, job analysis identifies the specific tasks that an individual performs in his or her position. This description is useful for preparing job descriptions, developing selection procedures, and designing training. However, if an across-job comparison is attempted, a job-oriented description fails, in that it does not provide a standardized method of classification. This is where the worker-oriented approach excels since it allows jobs to be classified by using predefined generalized statements of work activities instead of very specific task statements. Task descriptors used in the job-oriented approach focus on the work that is actually done within a given position. The worker-oriented approach uses work behaviors that are not specific to any position, but rather focus on the "human attributes that underlie the accomplishment of the tasks" (Peterson, et al., 1999, p. 105).

The O*NET has culminated much of the research that McCormick and others have produced on GWAs. O*NET researchers have broken GWAs into two levels; higher-order GWAs and lower-order GWAs. There are nine higher-order GWAs that break work down into extremely general functions. Each of the higher-order GWAs has some associated lower-order GWAs. In total, there are 42 lower-order GWAs.

*Universal Leadership*

As Hamlin (2004, 2005) has suggested, leadership is a discipline in which there are generic competencies, generic functions, generic behaviors, and universal styles. In his 2004 study, Hamlin looked at three separate

organizations in the U.K. He used data that had been gathered from these organizations regarding leadership behaviors and analyzed similarities between them. Hamlin identified six positive universal behaviors and five negative universal behaviors. The six positive behaviors consisted of: effective organization and planning/proactive management; participative and supportive leadership/proactive team leadership; empowerment and delegation; genuine concern for people/looks after the interests and development need of staff; open and personal management approach/inclusive decision making; and communications and consults widely/keeps people informed. The five negative universal behaviors are: shows lack of consideration or concern for staff/ineffective autocratic or dictatorial style of management; uncaring, self-serving management/undermining, depriving, and intimidating behavior; tolerance of poor performance and low standards/ignoring and avoidance; abdicating roles and responsibilities; and resistant to new ideas and change. These 11 behaviors compose Hamlin's model of universal leadership effectiveness.

Since conducting his study in 2004, Hamlin has compared his model to several other studies focused on identifying universal or generic behaviors, traits, or abilities of leaders, managers, or coaches. He first compared his model to an American study by Bergmann, Hurson, and Russ-Eft (1999) which focused on a grassroots model of leadership (as cited in Hamlin, 2005). Additionally, he compared his generic model of leadership effectiveness to Ellinger and Bostrom's (1999) managerial coaching behaviors study and Beattie's (2002) managerial learning facilitative behaviors work (as cited by Hamlin, Ellinger, & Beattie, 2006). Hamlin's model stood up against all the comparisons. After comparing his model to several other researchers' work, the results of Hamlin's (2004) study suggest that leadership is a discipline that can be generically described such that useful descriptors of leadership behaviors are identified.

*O\*NET Leadership Dimensions*

Within the occupational characteristics domain, the O\*NET defines leadership. This study defines a leader as an individual who exhibits traits in each of the following four dimensions: consideration, task-orientation, visionary, and problem solving. These dimensions come directly from the research conducted for the O\*NET and the individual definitions are identical to that of the O\*NET. Similar to Hamlin's work, developers of the O\*NET came to many of the same conclusions regarding the generalizability of leadership behaviors. Early research in leadership identified two capacities that leaders consistently perform (Fleishman, 1953; Likert, 1961); the first is consideration, which is "the extent to which the immediate supervisor acts in a friendly and supportive manner" (Peterson, et al., 1999, p.157). The second is task orientation, which is "the extent to which the immediate supervisor sets goals and assigns tasks for the work group" (Peterson, et al., 1999, p.157). These two dimensions are relatively constant and agreed upon by researchers. Additionally, developers of the O\*NET identified two more domains. The first is visionary leadership. This is defined as "the extent to which the immediate supervisor provides a clear vision for the work group and inspires commitment" (Peterson, et al., 1999, p.158). The visionary dimension arose from leadership research in an individual's ability to inspire or champion individuals within an organization. This concept is often called transformational or charismatic leadership, and revolves around the thought that good leaders communicate and inspire the direction of their organization (Bass, 1985; Conger & Konungo, 1987). Finally, creative problem solving has been identified as a capacity that is required of leadership (Mumford & Connelly, 1991). Creative problem solving allows leaders to effectively solve task and social problems that arise in the work place. For this study problem solving was "the extent to which the immediate supervisor solves difficult problems quickly and efficiently" (Peterson, et al., 1999, p.158).

It is important to note differences in conception when comparing Hamlin and the O\*NETs view of leadership. Hamlin's work is derived from an interpretive perspective. He used primarily qualitative methodologies to construct his model of leadership effectiveness. This construction lends itself to a more subjective, human-centered view of leadership. The O\*NET is derived from a post-positivistic perspective. Developers of the O\*NET used quantitative methodologies like factor analysis to identify the four constructs of leadership. This construction limits the subjective nature of leadership and focuses instead on what can be statistically derived based on a set confidence level. Although Hamlin and the O\*NET differ in their construction, both are attempting to identify universalistic leadership behaviors in that both look to compartmentalize leadership into areas that can describe all occurrences of the phenomenon.

**Research Methodology**

Building on the possibility that leadership as a discipline can be generalized and that generic behaviors of leadership can be identified, this study surveyed subject matter experts (SME) in the fields of leadership and the O\*NET (Hurt, 2004). Two groups of SMEs where chosen for this study in order to compare similarities and differences within their results. The O\*NET was primarily developed by Department of Labor researchers in the field of

Industrial/Organizational (I/O) Psychology. These researchers are viewed as extremely knowledgeable in the I/O field, but many of them are not subject matter experts in leadership. If leadership SMEs did not develop the four dimensions, then there may be differences in the responses from each group. These differences would be a result of the I/O psychologists creating the four dimensions rather than leadership SMEs. Therefore, by surveying one group of leadership SMEs and one group of O*NET SMEs any differences in their result could be identified.

The leadership group was comprised of the faculty members of a leadership-centered academic department at a research university located in the northern region of the United States. These participants were chosen because their primary job responsibility is the instruction of leadership characteristics to undergraduate and graduate students. Their academic knowledge combined with real-world leadership experience made the faculty members of this department strong SMEs. The O*NET group was comprised of individuals who have proven themselves SMEs either through relevant literature or daily use of the O*NET. Relevant O*NET literature was searched and the individuals who either authored papers or were contributors to papers were selected. Additionally, individuals who had proven their competency in the O*NET by successfully performing job analysis using O*NET information and techniques on a daily or weekly basis were also included in this group.

Individuals who were identified to be experts were sent a letter explaining the purpose of this study. The letter and survey were both distributed via email. The survey took SMEs approximately 20 to 30 minutes of their time to complete. The survey was administered using an online company, QuestionPro.com. Respondents were able to simply follow a hyperlink that was imbedded in the body of the letter. Clicking on the hyperlink took respondents directly to the survey. QuestionPro's software collected the data and provided some of the basic statistics (e.g., mean, standard deviation, and so on). QuestionPro was chosen because it provides complete anonymity for respondents and the instrument is readily accessible. Since QuestionPro is an entirely online, internet-based process, respondents with internet access anywhere were able to access the survey, particularly useful for this study because most of the O*NET SMEs were scattered around the U.S.

The survey asked SMEs to sort each of the 42 O*NET defined GWAs into one of four different dimensions of leadership, or none at all. Respondents were asked to match the leadership dimension that best represents each GWA in question. This allowed all 42 GWAs to be sorted into one of the four dimensions of leadership, or none at all. Following the GWA sorting, the SMEs rated the importance level of each GWA as it pertains to leadership. Respondents were given a five point Likert-type scale (responses ranged from not important to extremely important), and were asked to choose the level of importance of the work activity in question. This allowed for an overall importance rating to be calculated for each GWA.

Research presents an interesting dilemma in regards to how much information must be obtained to accurately identify the characteristics of a position. Guion (1989) discusses the dilemma of how many surveys a researcher needs to collect in order to accurately identify a job. It would seem intuitive that this is a simple statistical calculation based on reliability and confidence. However, jobs are not static and job analysis needs to be able to predict or have enough rational basis for specifying position characteristics; otherwise, the results of a researcher's job analysis could only show how a position looks in the past, never looking towards the future. In response to this, Mauer and Tross (2000) looked at the minimum amount of information necessary to identify a job. In their study they found that a small committee of subject matter experts (8 individuals) could produce nearly identical results to a large group of job incumbents (32 individuals). The results of their study showed that the final task and KSA ratings were statistically identical between both parties. The significance of Mauer and Tross's findings is that showed that surveying SMEs is just as effective as surveying job incumbents.

*Research Hypotheses*

In analyzing the results of the survey basic descriptive statistics were first used to compare the two groups. A frequency table was constructed listing the count (number of responses), the percent (percent responses to each dimension), and averaged importance ratings for each group. For this study, each of the 42 GWAs was sorted into one of four dimensions of leadership or none at all. This allowed for the frequencies to be tabulated of each GWA and for each group of SMEs. Additionally, the average importance rating for each GWA and each group was calculated.

Next, each group was analyzed using two statistical techniques designed to test for significant differences between the two groups of SMEs participating in the study. The first statistical test was a Fisher exact test. The Chi-squared test for independence was initially looked at, however, upon further consideration there were found to be some limitations to the Chi-squared test. Namely, two problems with it were identified. First, Chi-squared requires that 80% of the expected frequencies be more than five. This is a problem in that many of the counts have less than five data points. Second, the Chi-squared test requires that none of the expected frequencies is less than one. This is in many ways a bigger problem as nearly every GWA has at least one dimension that was not ranked and thus has a value of zero. According to Sproull (1988) the Fisher test for exact probabilities is a better test when data does not

fit the constraints of the Chi-squared test. Using the Fisher test for exact probabilities to compute the p-value, a 0.05 confidence level was used in the analysis to test the hypothesis that:

$H_o$: O*NET SMEs and leadership SMEs do not differ in their choice of leadership dimension.

The second statistical test used was the t-Test for comparing the means of two independent groups. The t-Test looks at how closely the means of two groups are related within the specified confidence level. In the survey, respondents had to answer two questions about each of the 42 GWAs. The first was which of the four leadership dimensions does the GWA best represent. The second part to each question asked respondents to rate the importance of the given GWA to an organizational leader. Respondents chose between five responses on a likert-type scale with values that ranged from not important to extremely important. Using a confidence level of 0.05 the following hypothesis was tested:

$H_o$: Mean importance ratings of the O*NET SMEs and the leadership SMEs will not differ.

*Usability of the GWAs*

Since the ultimate goal of this study was to identify the GWAs that best represent the four dimensions of leadership, a decision on the usability of each GWA was made. This decision was based on the two statistical tests that were discussed above. First, if the GWA "Rejected" the null hypothesis in the Fisher test; then statistically both groups were not in agreement as to which dimension that GWA belongs. Second, if the GWA "Rejected" the null hypothesis in the t-Test; then statistically both groups were not in agreement as to its importance level. Therefore, any GWA that had a decision of "Reject" for either the Fisher and/or the t-statistic were identified to be not usable for this study because of the lack of statistical agreement between groups. These GWAs were removed from this study because there is a 95% chance that the two groups did not agree. The remaining GWAs were then sorted by the combined frequency of their leadership dimension and ranked based on importance.

**Results**

In the leadership group, 32 leadership SMEs were identified and emailed the survey. Of the 32 individuals who where given the survey, nine responded to the questionnaire, representing a 28% response rate. The O*NET group of SMEs also had a total of nine respondents. Twenty-seven O*NET SMEs were identified through a search of the relevant literature; each expert was sent the survey and cover letter via email. Of the 27 individuals, nine completed the entire survey, representing a 33% response rate. After the survey results were interpreted using the methodology described earlier, 28 usable GWAs were identified for the leadership dimension and importance rating. These GWAs were then sorted into their identified dimension. Fourteen GWAs were identified to be unusable. These GWAs were removed from this study and are identified as such at the bottom of Table 1.

*Selecting a Dimension*

For the identification of the leadership dimension that each GWA best represents, a combined frequency chart was created. The frequency data from each group of SMEs was coalesced to create a combined frequency chart. It was beyond the scope of this study to statistically analyze the result of the combined frequencies. Therefore, the combined frequencies of each group were the only descriptive statistics used in the identification of a GWA primary dimension. The frequencies were tabulated and a primary dimension was identified based on the percentage agreement between each group. The fifth column in Table 1 lists the primary dimension that the GWA best represents. This column is based on the percent of the combined frequency. Additionally, a combined average importance rating was calculated, this is the summed average of the importance rating of all the survey respondents and is presented in the last column of Table 1.

*Consideration GWAs.* The GWAs whose primary dimension was consideration were extracted. Those GWAs were then rank ordered based on their combined average importance rating. Table 1 shows the Generalized Work Activities that best represent the consideration dimension of leadership. What is interesting about the consideration GWAs is that the top three rated between very important and extremely important. The most important was "coaching and developing others" with a 4.61 the next was "developing and building teams" at a 4.33, third highest was "establishing and maintaining interpersonal relationships" at 4.28.

*Task-orientation GWAs.* From Table 1 the GWAs whose primary dimension was task-orientation were extracted. Those GWAs were then rank-ordered based on their combined average importance rating. Table 1 shows the GWAs that best represent the task-orientation dimension of leadership. Much like the consideration GWAs, the task-orientation GWAs had extremely high combined average importance ratings. The top three were "guiding, directing, motivating, subordinates" at a 4.50, "communicating with supervisors, peers, or subordinates" at 4.17. Finally, "organizing, planning, and prioritizing work," at 4.06.

*Visionary GWAs*. The GWAs whose primary dimension was visionary were extracted. Those GWAs were then rank-ordered based on their combined average importance rating. Table 1 shows the GWAs that best represent the visionary dimension of leadership. In total, there were very few GWAs that make-up the visionary dimension of leadership. Two of the GWAs, "developing and building teams" and "thinking creatively," were tied with other dimensions, indicating that the SMEs felt these GWAs are representative of both dimensions. There were only two GWAs identified to be solely representative of the visionary dimension; "developing objectives and strategies" and "selling or influencing others."

*Problem solving GWAs*. The GWAs whose primary dimension was problem solving were extracted. Those GWAs were then rank-ordered based on their combined average importance rating. Table 1 shows the GWAs that best represent the problem solving dimension of leadership. In the problem solving dimension three GWAs were rated with an average importance level of more than 4.0, indicating that SMEs thought them to be between very important and extremely important to an organizational leader. These three were: "making decisions and solving problems, resolving conflicts and negotiating with others," and "thinking creatively."

Table 1. *Fisher, t-Statistic, Primary Dimension, and Importance Ratings of GWAs*

| GWA Title | Fisher | t-Statistic | | Dimension | Importance |
|---|---|---|---|---|---|
| | p | $t_c$ | $t_o$ | | |
| Coaching and Developing Others | 0.557 | 2.120 | 1.455 | Consideration | 4.61 |
| Developing and Building Teams | 1.000 | 2.120 | 0.970 | Consideration\Vision | 4.33 |
| Establishing and Maintaining Interpersonal Rel. | 1.000 | 2.120 | -0.256 | Consideration | 4.28 |
| Training and Teaching Others | 0.852 | 2.131 | -1.309 | Consideration | 3.59 |
| Assisting and Caring for Others | 1.000 | 2.120 | -0.383 | Consideration | 3.56 |
| Comm. with Persons Outside Org. | 0.141 | 2.131 | -0.204 | None | 3.18 |
| Performing or Working Directly with the Public | 0.613 | 2.145 | -2.018 | None | 2.13 |
| Estimate the Char. of Products, Events, Info. | 1.000 | 2.120 | -1.424 | None | 2.11 |
| Controlling Machines and Processes | 0.576 | 2.145 | -1.986 | None | 1.44 |
| Handling and Moving Objects | 0.206 | 2.131 | -1.775 | None | 1.29 |
| Repairing and Maintaining Electronic Eqp. | 0.202 | 2.145 | -2.049 | None | 1.19 |
| Repairing and Maintaining Mechanical Eqp. | 0.202 | 2.145 | -2.049 | None | 1.19 |
| Making Decisions and Solving Problems | 1.000 | 2.120 | 1.414 | Problem Solving | 4.50 |
| Resolving Conflicts; Negotiating with Others | 0.689 | 2.145 | -1.323 | Problem Solving | 4.25 |
| Analyzing Data or Information | 1.000 | 2.120 | -1.768 | Problem Solving | 3.83 |
| Getting Information | 0.082 | 2.131 | -1.512 | Problem Solving | 3.78 |
| Monitor Processes, Materials, or Surroundings | 0.361 | 2.120 | -1.265 | Problem Solving | 2.89 |
| Processing Information | 0.741 | 2.145 | -1.815 | Problem Solving | 2.25 |
| Guiding, Directing, Motivating Subordinates | 1.000 | 2.120 | -0.371 | Task-Orientation | 4.50 |
| Comm. with Supervisors, Peers, Subordinates | 0.565 | 2.120 | -1.562 | Task-Orientation | 4.17 |
| Coordinating the Work and Activities of Others | 0.082 | 2.120 | 0.000 | Task-Orientation | 4.11 |
| Organizing, Planning, and Prioritizing Work | 1.000 | 2.120 | 1.114 | Task-Orientation | 4.06 |
| Staffing Organizational Units | 0.247 | 2.131 | 0.948 | T-Orientation\None | 3.35 |
| Monitoring and Controlling Resources | 1.000 | 2.120 | 0.000 | Task-Orientation | 3.22 |
| Scheduling Work and Activities | 0.471 | 2.145 | -1.722 | Task-Orientation | 3.06 |
| Developing Objectives and Strategies | 1.000 | 2.120 | 1.796 | Visionary | 4.39 |
| Thinking Creatively | 0.085 | 2.131 | -0.334 | Vision.\P. Solving | 4.06 |
| Selling or Influencing Others | 0.469 | 2.145 | -1.263 | Visionary | 3.00 |
| Documenting/Recording Information | 0.131 | 2.131 | -3.948 | Removed | |
| Specifying Tech. Devices, Parts, and Equipment | 0.131 | 2.131 | -3.544 | Removed | |
| Eval. Info. to Determine Compliance Standards | 1.000 | 2.120 | -2.268 | Removed | |
| Identifying Objects, Actions, and Events | 0.793 | 2.131 | -2.183 | Removed | |
| Implement ideas, programs, systems, products | 0.206 | 2.120 | -2.121 | Removed | |
| Inspecting Equipment, Structures, or Material | 0.698 | 2.131 | -2.212 | Removed | |
| Interacting with Computers | 0.430 | 2.131 | -3.877 | Removed | |
| Interpreting the Meaning of Info. for Others | 0.404 | 2.120 | -5.336 | Removed | |
| Judging the Quality of Things, Services, People | 0.420 | 2.120 | -3.951 | Removed | |
| Operating Vehicles, Mechanized Devices,Eqp. | 0.206 | 2.131 | -2.155 | Removed | |

| GWA Title | Fisher | t-Statistic | | Dimension | Importance |
| | p | $t_c$ | $t_o$ | | |
| --- | --- | --- | --- | --- | --- |
| Performing Administrative Activities | 1.000 | 2.120 | -2.626 | Removed | |
| Performing General Physical Activities | 0.471 | 2.131 | -7.101 | Removed | |
| Provide Consultation and Advice to Others | 0.041 | 2.131 | -2.147 | Removed | |
| Updating and Using Relevant Knowledge | 0.143 | 2.145 | -2.688 | Removed | |

*None of the Above GWAs*. From Table 1 the GWAs not associated with one of the four leadership dimension were extracted. Those GWAs were then rank-ordered based on their combined average importance rating. Table 1 provides some interesting results. If a GWA was identified to be representative of a dimension of leadership, then it can be assumed to be important to a leader. This assumption holds true for the four dimensions discussed above. Conversely, if a GWA was found to be not representative of a dimension of leadership, then that GWA should not be important to a leader. As can be seen in Table 1, this is not the case. There were seven GWAs that were not sorted into any leadership dimension, yet SMEs rated them between important and very important.

**Conclusions and Recommendations**

This study had two major limitations. First, this study only tested the four dimensions of leadership that O*NET researchers have defined. There are hundreds of other potential ways of defining leadership, but this study only focused on this one model and did not include alternate views, models, or theories. Likewise, this study only used the O*NET GWAs to describe the characteristics of leadership. Other defined methods for describing leadership were not used. Second, the results of this study are intended for research use only. This is not to say that someday the results might have applicability to the practitioner, but rather that more research beyond this study is required. The intent of this study was to determine whether leadership characteristics could be mapped to O*NET GWAs. The results of this study showed this to be a feasible hypothesis, but more research will be required to identify the scope and possible application of these results.

*O*NET Dimensions of Leadership*

In analyzing the data one of the most interesting findings is actually not one of the leadership dimensions, but rather those GWAs that were found to not be associated with a leadership dimensions. What makes this an interesting finding is that four of the seven GWAs that were identified as not associated with a dimension of leadership were rated highly in the overall importance scale. The lowest of the four was "estimating the quantifiable characteristics of products"; it ranked at a 2.11, indicating that SMEs thought it was between somewhat important and important. The top two were "staffing organizational units" at 3.35 and "communicating with persons outside the organization" at a 3.18. These were rated by SMEs to be between important and very important.

One of the assumptions in this study was that the O*NET dimensions of leadership: consideration, task-orientation, visionary, and problem solving; would be adequate measures of the construct of leadership. However, if this assumption is correct, then those GWAs identified to be not representative of any dimension should have rated very low on the importance scale. As was mentioned above, this was not the case. Two GWAs were identified to rate fairly high on the overall importance rating. There are two possible explanations for these results. First, the difference in the importance vs. no dimension GWA results may indicate that the four O*NET leadership dimensions used in this study are not descriptive enough. The four dimensions do not seem to be specific enough to describe GWAs that were identified to be important to an organizational leader. Perhaps there needs to be more research conducted in these four dimensions to see whether they are truly the dimensions of leadership. Second, what these results could indicate is that respondents where confused as to the differences between leadership and management. What may be happening with the "no dimension" GWAs is that respondents were identifying management characteristics rather than leadership characteristics. If this is the case, then the survey failed to elaborate on this difference. What may be presented in Table 1 are characteristics of managers not leaders, but respondents rated them as important to a leader. In consideration of the previous facts, this study supports the four O*NET leadership dimensions in that it showed that 28 GWAs were classifiable using these dimensions. Further testing should be done on the O*NET leadership dimensions, to prove that they are descriptive enough and to identify if other dimensions of leadership should be added to the O*NET leadership model.

*Potential Implications and Contributions to HRD*

With further research, the results of this study could have significant implications for training programs and educational development programs. In the training arena one of the most difficult and time-consuming problems is identifying the skill gaps of a learner, then basing training on those identified performance deficiencies. From an

educational and curriculum development standpoint, the results of this study also have significant implications. There are hundreds of colleges and universities around the country, all of them in some form or another attempting to teach basic leadership and leadership development practices. They do so because employers are increasingly saying that leadership ability is an essential quality for newly hired college graduates. What this study's results could provide is a building block for new leadership curriculum. With a codified list of work activities, educators could tailor their programs towards these concepts.

This study provided some of the ground work for using the O*NET to study leadership. What this type of research needs now is more testing through further studies. Those studies should include a larger sample size and the use of job incumbents. More research is also need regarding the O*NET. As was mentioned earlier, some of the results imply that the O*NET dimensions of leadership may not be specific enough for defining the leadership characteristics. Detailed research in the dimensions that make-up leadership would be advised, as well as more testing on the validity of the O*NET GWAs. Finally, it would be advisable to test the results of this study longitudinally. Leadership characteristics may change over time, therefore the results presented here may not be applicable tomorrow.

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