

A TOOL FOR SENIOR PROFESSIONAL DEVELOPMENT IN THE CANADIAN FORCES

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The 360-degree assessment is a well-known organizational feedback system that has been used successfully for leadership development. In order to get a more complete picture of leaders' strengths and developmental needs, leadership assessments are completed by superiors, peers, and subordinates. The target leader also completes a self-assessment. Because of these multiple perspectives, information can be obtained on a broad range of leadership behaviours (Craig & Hannum, 2006) with increased reliability and validity (Morgeson, Mumford, & Campion, 2005). This comprehensive feedback, which includes a discussion with a trained facilitator, is thought to be a powerful agent of self-insight and improvement.

The philosophy underlying the 360-degree assessment is that effective leadership begins with "knowing oneself", which represents the essence of authentic leadership, a relatively nascent construct in the leadership domain (Avolio & Gardner, 2005). Avolio and Gardner argued that heightened self-awareness forms the basis upon which positive forms of leadership can rest, such as transformational and ethical leadership. In this context, the self-insight and self-development opportunities offered by the 360-degree assessment become very relevant to facilitate the kind of leadership that is highly desired within the Canadian Forces (CF).

Currently, the CF are sponsoring a 360-degree assessment program for senior officers, (Major and up), attending 10-month courses at the Canadian Forces College. This service is administered and provided by some faculty members from the Military Psychology and Leadership department, at the Royal Military College of Canada. This external provision of service ensures that the results of the assessments remain at arm's length from the officers' chain of command. The assessment is offered purely for developmental reasons, a practice encouraged in the literature (e.g., Antonioni, 1996). Indeed, "... self-assessment, especially when done for developmental reasons, sets the stage for receiving constructive feedback from others" (Morgeson et al., 2005, p. 205).

Although in our practice we have not yet collected sufficient empirical evidence to determine whether the 360-degree assessment leads to attempts to improve or concrete improvements in leadership behaviours, other researchers have demonstrated such benefits (e.g., Drew, 2009; Green, 2002).

The objectives of this study were to investigate the psychometric properties of the questionnaire used in the 360-degree assessment and to make recommendations for improving the instrument.

The 360-degree process in the CF

For the most part, the 360-degree process as utilized by the CF follows the best practices recommendations developed over years of research. For instance:

- a. the survey items are based on an analysis of competencies developed for senior officers (Whiddett & Galpin, 2002);
- b. the items refer to specific and observable behaviours (Morgeson & al., 2005; Whiddett & Galpin, 2002);
- c. the feedback sessions are carried out by trained facilitators (Tosti & Addison, 2009), all of whom are subject matter experts in psychology and/or leadership; and
- d. ratees are told to focus on no more than three areas for improvement (Morgeson & al., 2005; Tosti & Addison, 2009).

Giving some ownership in the process has been known to increase the acceptance of the guidance provided by the 360 system (Mason, Power, Parker-Swift, & Baker, 2009). To this end, we ask the ratees to nominate potential raters who have had several opportunities to observe their work behaviours. This approach may seem paradoxical because the literature recommends that raters remain anonymous in order to ensure honest answers (Mason & al., 2009). To a large extent, we comply with this requirement because ratees don't know which of their nominees completed the questionnaires nor do they have access to individual quantitative responses. Morgeson et al. (2005) warned that written comments by raters have the potential to violate the anonymity and, therefore, comments should be transcribed or summarized when presented to ratees. Because of the high work-load that this would represent, we have recently taken a different approach: we warn raters that their written comments will be seen verbatim by the ratee and it would be best to avoid referring to specific situations should they wish to remain completely anonymous.

There are some recommendations that we have decided not to implement. For instance, Whiddett and Galpin (2002) advocated that the response scale should have a maximum of seven points whereas we use an eight-point scale. Tosti and Addison (2009) suggested including the draft of a developmental plan in the feedback session. Although we often discuss recommendations for change during the session, we ask that the written plan be completed as soon as possible after the session, with an electronic copy sent directly to the ratee's facilitator. Third, some researchers have suggested that ratees should discuss the results with their raters to make ratees accountable for improving their leadership (Antioni, 1996; Morgeson et al., 2005). Although this practice may be appropriate in some settings, it is less appropriate in a military context because of hierarchical issues and frequent postings and because we wish to protect the anonymity of the raters. Finally, Tosti and Addison (2009) proposed the use of self-referenced

feedback instead of group norms. We prefer the use of group norms obtained by averaging the results of all students having attended the 10-month course over a number of years.

Lastly, there is little agreement on the ideal number of items to use in the quantitative assessment. According to Morgeson et al. (2005), some experts suggest 40 to 60 items, but surveys that contain up to 130 items have been used. Totsi & Addison (2009) indicated that 50 items should be a maximum. Our questionnaire includes 50 items.

The psychometric properties of the instrument

A lack of agreement across rater groups may represent an area of concern. Fletcher, Baldry, and Cunningham-Snell (1998) warned against the possibility of item bias and/or biased interpretations, which occur when various groups interpret items differently. In their study of different organization types, Bradley, Allen, Hamilton, and Filgo (2006) found more agreement between rater groups than expected and concluded that biased interpretation had little influence on the results. Similarly, Craig and Hannum (2006) reported that usually less than 10% of items function differently for different rater groups and these differences are usually minimal. On a more positive note, disagreement between rater groups can represent different but equally valid perspectives of behaviour. As such, they can be very useful in increasing awareness of dissimilar impressions. Therefore, in cases of disagreement across rater groups, it is important to determine whether the source of disagreement stems from a having a different interpretation of an item or from having a different perspective on the behaviour.

Another psychometric requirement is that for ratings to be comparable, the factor structure must represent the latent constructs in each of the rater groups (Craig & Hannum, 2006). If not, assessments may be misleading (Fletcher et al., 1998). Morgeson et al. (2005) reported that most studies examining 360-degree assessments have found very high correlations among the different leadership dimensions. These high correlations explain why "... most published research has chosen to combine all the dimensions into one overall leadership measure" (Morgeson et al., 2005, p. 202), in which case it is best to present results item by item. Hence, it is important to empirically examine the factorial structure of the questionnaire, which was the purpose of the current study.

The questionnaire we use includes six competencies, which were identified by experts working at the CF Leadership Institute (CFLI) along with some hired consultants. The first three competencies represent Skills and Capabilities. The first scale describes behaviours relating to Professional/Technical Expertise that describe acquiring and sharing new knowledge as well as remaining current. The second group of items, Conceptual Capabilities, refers to decision-making, problem-solving and using the big picture. The human dimension and interpersonal skills are captured by the third scale, Communication Skills. The remaining three competencies describe various aspects of leadership. First, Personal Leadership defines the personal approach taken to leadership, aspects related to character and values. The second dimension, characterized

by cohesion, delegation, development of subordinates and the management of interpersonal conflicts addresses Group Leadership. Lastly, Organizational Leadership includes strategic planning and awareness of developments within and outside the organization. Four open-ended questions complement the quantitative survey but were not part of the current study.

Method

Participants

Three hundred and twenty two Majors and recently promoted Lieutenant-Colonels who took the course on Joint Command and Staff Program (JCSP) at CFC during the last three years were included in the study. Collectively, they had nominated as potential raters 716 superiors, 1045 peers, and 1089 subordinates. The actual response rate from the raters was smaller: 673 (94%) superiors, 942 (90%) peers, and 954 (87.6%) subordinates. However, it should be noted that several raters left some items blank and analyses included only those participants who had a complete response set.

Materials and Procedure

The questionnaire used comprised 50 items, distributed as follows: six items for Professional/Technical Expertise (e.g., “Displays well-developed task-related skills and knowledge”); seven items for Conceptual Capabilities (e.g., “Makes proper use of specialist expertise provided by others”); seven items for Communication Skills (e.g., “Adjusts own language and style to present ideas and recommendations orally in a clear and unambiguous manner”); 11 items for Personal Leadership (e.g., “Remains calm and effective in high-pressure situations”); 11 items for Group Leadership (e.g., “Initiates and supports activities that build unit morale and cohesion”); and eight items for Organizational Leadership (e.g., “Maintains mutually beneficial relationships with officials and decision-makers both within and outside of the organization”). Responses were given on a 8-point scale (1 = *strongly disagree* to 8 = *strongly agree*).

Ratees were asked to submit the names and e-mail addresses of at least two superiors, three peers, and three subordinates who had observed their work behaviours. Then, a research assistant contacted these potential raters. Questionnaires were administered electronically to ratees and raters alike. In the end, all ratees were given a written report and met with a trained facilitator for a one-hour individual feedback session. They were then asked to submit a developmental plan.

Results

We carried out exploratory factor analyses on four rater groups: self, superiors, peers, and subordinates. We chose exploratory over confirmatory factor analyses because (a) this was the first time that the data were examined and (b) we thought we could obtain more useful

information about the data from exploratory analyses. Indeed, should the six-factor structure not be confirmed, what else could we have done with the data? Also, although we could have divided the data of the rater groups into two subsamples, one to do confirmatory and the other, exploratory factor analyses, the ratees group was too small to be divided. The four-step method recommended by Fabrigar, Wegener, MacCallum and Strahan (1999) was used to determine the optimal number of factors for each group. The method includes an examination of the scree plot; a parallel analysis in which the observed eigenvalues are compared to those obtained from random data; an examination the Root Mean Square Error of Approximation (RMSEA), which provides information on the goodness of fit (values below .08 indicate an acceptable fit whereas values below .05 suggest a good fit); and an examination of the rotated solution. Missing data were deleted listwise. The software SPSS 19 was used.

The first set of analyses was carried out using the entire set of 50 items. As indicated in Table 1, no clear solution emerged for the three rater groups whereas for the ratees, a two factor structure emerged as the best, but did not correspond with the Skills and Capabilities and Leadership second order factor. We then decided to carry out two separate sets of analyses, with the first 20 items (Skills and Capabilities) and with the last 30 items (Leadership). Such results could be interpreted more easily (see Table in Appendix A).

For the Skills and Capabilities second-order dimension, two factors emerged for the three rater groups whereas the solution was unifactorial for the ratees. The first factor, Professional /Technical Expertise comprised 10 items whereas the second factor, Interpersonal Skills and Flexibility included six items. Four items loaded on both factors, at least for some groups. These items are listed in Appendix B.

A similar scenario arose for the Leadership Competencies, in which two factors surfaced across all groups. The first factor comprised 12 items and was labeled Effective Leadership. The second factor, Fairness and Integrity, included six items. Twelve items presented unclear or double loadings across groups. They are listed in Appendix B.

In sum, the theoretical six factor structure could not be reproduced. Results could be more easily interpreted when the first 20 items and the last 30 items were analyzed separately. Two factors emerged in each of these sub-groups of items. In total, 16 (32%) items had a different loading pattern in at least one of the four groups examined.

Conclusion

The number of items that functioned differently for different rater groups was higher than the expected maximum of 10% suggested by Craig and Hannum (2006). This discrepancy prompted the research team to reflect on the potentially problematic items. However, CFC has been satisfied with the 360-degree assessment and the trained facilitators have gained valuable experience using the instrument. Hence, there was some resistance to the possibility of making major changes to the questionnaire. Consequently, the 16 potentially problematic items were

examined to determine the possibility that the observed factor pattern discrepancy could have resulted from different rater groups interpreting the items in a unique manner, which is undesirable (Penny, 2003). In the end, 10 items were re-written (see Appendix B). Of those, four items were split in two, bringing the overall number of items to 54 in the new version. Furthermore, the team decided that the written report would no longer include the averages of the six theoretical competencies. Results will only be provided for items, but an introductory page will include a brief description of the six competencies on which item development was based. Overall, we believe that the factorial analyses were helpful in guiding some improvements to the process, although we were limited in the amount of change we could implement.

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Appendix A – Table of results

Table 1

Summary of Findings for the Exploratory Factor Analyses

Group	All 50 items	Skills First 20 Items	Leadership Last 30 Items
Self	N=314 2 factors	N=322 1 factor	N=314 2 factors
Superiors	N=285 *	N=673 2 factors	N=589 2 factors
Peers	N=585 *	N=673 2 factors	N=589 2 factors
Subordinates	N=678 *	N=954 2 factors	N=695 2 factors

* No clear cut interpretable solution was found

Appendix B – List of potentially problematic items and changes made

Skills and Capabilities

Items that had double loadings or loaded on a different factor in at least one group:

- 10 – When making decisions, evaluates their impact on the broader organization.
- 13 – Makes proper use of specialist expertise provided by others.
- 18 – Adjusts own language and style to present ideas and recommendations orally in a clear and unambiguous manner.
- 20 – Explains reasoning behind own opinions.

Item that was changed:

- 18 - When speaking, adapts language to an appropriate level for the audience.

Leadership competencies

Items that had double loadings or loaded on a different factor in at least one group:

- 23 – Accepts accountability for actions.
- 24 – Inspires trust; establishes relationships of trust with people at all levels.
- 28 – Remains calm and effective in high-pressure situations.
- 32 – Initiates and supports activities that build unit morale and cohesion.
- 34 – Ensures goals and expectations are clearly understood by subordinates.
- 35 – Uses delegation effectively; avoids micromanaging.
- 36 – Gives members of own unit balanced, timely, constructive feedback about their performance.
- 38 – Represents the unit effectively to the rest of the organization.
- 39 - Works with subordinates to help them devise specific action plans for personal/professional development.
- 41 – Effectively manages and resolves interpersonal conflicts.
- 45 – Maintains mutually beneficial relationships with officials and decision-makers both within and outside of the organization.
- 46 – Does what is right for the organization, even if not personally rewarding.

Items that were changed:

- 24 – Inspires trust.
- 28a – Stays calm in high-pressure situations.
- 28b – Is effective in high-pressure situations.
- 32 – Promotes activities that build unit morale and cohesion.
- 35a – Uses delegation effectively.
- 35b – Avoids micromanaging.
- 36a – Gives members of own unit timely feedback about their performance.
- 36b – Gives members of own unit useful feedback about their performance.
- 39 - Works with subordinates to help them devise action plans for personal/professional development.
- 41 – Effectively handles interpersonal conflicts.
- 45 – Maintains beneficial relationships with officials and decision-makers outside of the organization.
- 46a – Does what is right for the organization.
- 46b – Is not self-serving.