

A PHENOMENOLOGICAL INQUIRY INTO ENGINEERS' MOTIVATION TO LEAD

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Abstract

The present paper describes a qualitative (phenomenological) study of six engineering managers who were, within the past two years, promoted into management roles at a medical device manufacturer in Southern California. The objective of this study was to understand their motivation to lead. Each engineer participated in an interview which was approximately 30 minutes long, semi-structured, and guided by an eleven-question interview guide based on the literature. The transcriptions of each interview were then analyzed using first and second cycle coding. In all, eight themes emerged to explain why these engineers accepted leadership roles: (a) some simply enjoy leading, (b) some felt a social obligation, (c) some were motivated by values higher than mere money, (d) some were motivated by a sense of benevolence, (e) some were motivated by observing other leaders in the organization, (f) some found additional motivation to lead as they experienced success as managers, (g) some were motivated by their engineering skills, and, most significantly, (h) some found motivation to lead in a desire to teach and mentor. The study contributes to the literature by identifying a previously unrecognized motivation to lead (motivation to teach and mentor). Because a qualitative design was used, this study demonstrates only that this motivation to lead was present in these six engineers; no claim regarding generalizability is made. Additionally, three tentative practical implications for training potential engineering managers are described. However, a follow-on quantitative study is required before generalizing these findings.

Keywords

motivation to lead, MTL, phenomenological, qualitative, engineering managers, engineers, teach, mentor

Introduction

According to Clemmons and Fields (2011), the research stream on *motivation to lead* (MTL) began with the quantitative work of Chan and Drasgow (2001). Since their seminal work, there have been a number of other quantitative studies focused on MTL, including several quite recently (e.g. Cho, Harrist, Steele, & Murn, 2015; Guillén, Mayo, & Korotov, 2015; Stiehl, Felfe, Elprana, & Gatzka, 2015; Rosch, Collier, & Zehr, 2014; and Mascia, Dello Russo, & Morandi, 2014). However, a journal search revealed few qualitative articles. Fortunately, Patton observes that qualitative inquiry can still be used later in the process “to add depth and detail to statistical findings” (p. 230). Accordingly, this paper presents the results of a qualitative (phenomenological) inquiry into MTL with the intent of adding the depth and detail that Patton refers to. As such, this paper is organized in four sections. The first section is a review of the literature related to motivation to lead. The second section describes the methodology, including descriptions of phenomenological inquiry, the coding methodology, and the research sample. The third section describes the results of the analysis and the themes which emerged. The final section provides a discussion of the findings both as they relate to the research question and as they relate to implications for practice. In total, eight motivations to lead were observed, one of which was previously unknown to the literature. Furthermore, three implications for practice are described.

Literature Review

In their quantitative study of over 2,000 soldiers and college students, Chan and Drasgow (2001) concluded that there are three components of MTL which they called “affective-identity motivation to lead (AI-MTL), non-calculative motivation to lead (NC-MTL) and social-normative motivation to lead (SN-MTL)” (p. 492). The affective-identity component involves both an innate desire to lead and the formation of an identity as a leader, hence the first two questions in the interview guide were *What feelings do you associate with your motivation to lead?* and *How does your sense of self-identity contribute to your motivation to lead?* The social-normative component involves the leader’s sense that they have an obligation, either social or moral, to lead, hence the next two questions were *How does a sense*

of moral obligation contribute to your motivation to lead? and *How does a sense of social obligation contribute to your motivation to lead?* The non-calculative component involves the degree to which the leader is motivated by ideas higher than mere transactional reward, hence the fifth question was *How does the potential for personal gain affect your motivation to lead?*

In a separate quantitative study on MTL, Clemmons and Fields (2011) sampled 231 officers in the United States Air Force to understand the effect of both “self-enhancement values” and “self-transcendence values” (Clemmons & Fields, 2011, p. 587) on MTL. Self-enhancement was defined as a striving for “achievement and power” (p. 589) whereas self-transcendence was defined as striving for “universalism and benevolence” (p. 589). They found support for their hypothesis that self-enhancement is positively related to affective-identity MTL but not for their hypothesis that self-transcendence is positively related to social-normative MTL. Furthermore, they found partial support for their hypothesis that self-enhancement and self-transcendence are related to non-calculative MTL. Accordingly, questions 6 and 7 in the interview guide were *How does a sense of achievement and power affect your motivation to lead?* and *How does a sense of benevolence affect your motivation to lead?*

Quite recently, two other quantitative studies have explored additional psychological factors related to MTL. By surveying 260 students in two different international business school programs, Guillén et al. (2015) studied the relationship between MTL and “two types of self-to-leader comparisons: self-to-exemplar and self-to-prototype” (p. 802). In analyzing their data, Guillén et al. found (a) there is a correlation between affective-identity MTL and self-to-exemplar comparisons, (b) there is also a correlation between affective-identity MTL and self-to-prototype comparisons but only when the prototype is perceived as affiliated, and (c) when leader self-efficacy is high, the correlations with the comparisons are reduced. Based on this research, question 8 was *What individuals influence or influenced your motivation to lead?*

Using a small sample of 81 undergraduate engineering students, Rosch et al. (2014) found evidence of a correlation between transformational leadership and affective-identity MTL. Specifically, they found that the students who saw themselves as transformational leaders displayed a desire to continue to lead. Based on this research, question 9 was *How does your sense that you will excel as a leader influence your motivation to lead?*

In that same vein, Cho et al. (2015) surveyed 231 American undergraduate university students to study the relationship between the satisfaction of basic needs and motivation to lead. They found that satisfaction for the basic need for competence correlates with affective-identity MTL and the satisfaction for the basic need of relatedness correlates with both social-normative MTL and non-calculative MTL. Accordingly, questions 10 and 11 were *How does your need to have a sense of competence influence your motivation to lead?* and *How does your need to have a sense of relatedness influence your motivation to lead?*

Together, these quantitative studies portray eleven components of motivation to lead. However, Creswell (2014) advises preceding quantitative with qualitative research aimed at identifying items to include in a quantitative study. Unfortunately, such qualitative research was conducted in none of the studies cited. The present study was designed to address this gap in the literature. Simply stated, the present study was designed to use open-ended questions to identify things which Likert-style questionnaires may have missed. Furthermore, it was assumed that any finding would be quantitatively validated in a subsequent study.

Methodology

Six engineers recently promoted into leadership roles were interviewed regarding their motivation to lead. Using an interview guide based on the literature to provide structure, each interview lasted approximately 30 minutes. Furthermore, each interview was recorded using a digital audio recorder, and following the interview, the complete interview was transcribed using Microsoft Word. The transcribed interviews were then coded (as defined by Saldaña, 2016), re-coded, and then analyzed using Qualitative Data Analysis (QDA) software. Conceptually, the approach was based in the philosophy of phenomenological inquiry.

Phenomenological Inquiry

Phenomenology is one of the sixteen qualitative research frameworks identified by Patton (2015). As such, it typically involves in-depth interviews of a relatively small number of people; the use of such small sample sizes is common practice in qualitative research (Patton, 2015; Creswell, 2014; Babbie, 2013; Padgett, 2008) because with qualitative research, generalizing the results is not the objective (Creswell, 2014). These interviews, from a mechanical perspective, are similar to interviews used in other methods of qualitative inquiry. The differentiating aspects of phenomenology are emphases on (a) discovering the essence of a phenomenon, (b) focusing on the “lived experiences” (Moustakas, 1994, p. 38) of people who have experienced the phenomenon, (c) approaching the investigation with “systematic efforts to set aside prejudgments” (Moustakas, 1994, p. 23), (d) incorporating both intuition and imagination into the study, and (e) grounding in the complex philosophical theory of Edmund Husserl. For the present

study, the methods of transcendental phenomenology were used to seek an answer to the following research question: *What is the motivation to lead of these engineers who have recently transitioned into leadership roles?* Per the qualitative methods literature (e.g., Patton, 2015; Creswell, 2014; Padgett, 2008; Vagle, 2014; Moustakas, 1994), the goal is to provide a rich description of the experiences of these six engineers; the goal is not to provide generalizable results.

Coding Method

The responses were coded using a modified form of “in vivo coding” (Saldaña, 2016, p. 105). The modification involved making minor edits to trim the length of very long codes. Furthermore, in some cases, the codes were slightly reworded to exactly match other similar codes. The text for each participant was then imported as cases into version 11 of the NVIVO QDA software package.

Using the QDA software, the in vivo first cycle codes were then coded using “pattern coding” (Saldaña, 2016, p. 235) as the second cycle coding method. The themes ultimately emerged from these second cycle codes. However, the first cycle codes were tied back to each theme, which demonstrates that during second cycle coding, the themes did not wander too far from the original data. Following the advice given by Saldaña, both the first cycle and second cycle codes were continually updated during the second cycle coding. Ultimately, this iterative process resulted in codes which were relatively consistent; this supports the claim of a rigorous approach (Patton 2015).

Research Sample

The sample was drawn from the research and development team of an emerging medical device manufacturer in Southern California. Each participant was promoted within the past two years into roles of either project or departmental management. Furthermore, each of the participants holds, as a minimum, a four-year degree in either engineering or computer science. Initially, the plan was to interview six such new engineering managers and add additional interviews until saturation was achieved. A seventh engineering manager was interviewed but the interview was not included because during the interview he revealed that he actually had eight years of management experience prior to being promoted at the medical device manufacturer. Nonetheless, it does appear that saturation (Patton, 2015) was reached with the six other participants. However, saturation does not imply statistical significance; it merely implies the sample is fully described (Patton, 2015). As noted previously, the use of such small sample sizes is common practice in qualitative research (Patton, 2015; Vagle, 2014; Padgett, 2008).

Results

In the following, the results are presented in 14 sections. For the first 11 sections, the results are presented according to the 11 questions in the interview guide. For the next two sections, the results are presented according to two questions which were not on the interview guide, but emerged naturally during the interviews: *Why do you lead?* and *Is there anything else you would like to say?* Deviating from the interview guide is accepted practice in qualitative research (Patton, 2015; Padgett, 2008). For the final section, integrated analysis, the entire data was re-analyzed without breaking it into sections according to question.

Question 1: Feelings

Question 1 was designed to explore Chan and Drasgow’s (2001) affective component of motivation and was intended to help the participants recognize, identify, and describe any feelings related to their motivation to lead. The analysis of the responses and their in vivo codes suggests six themes regarding the affective component of motivation to lead. The first, and most dominant theme (*prefer not to lead*, 40 codes) related to some of these engineering managers’ preference to work as technical experts rather than as managers, or at least retaining some of their role as individual contributors. Together, these responses indicate that some engineers, and some engineering managers, truly do not want to be managers. Furthermore, some of these engineering managers seemed to prefer to continue their work as engineers while occupying management roles, and even then, there is a pervasive sense of uncertainty – did they make the right choice in becoming a manager? The coded responses to question 1 incorporating this theme came from Carl and Dominic. Carl spoke with the most fire on this topic, making statements such as “there’s been a conscious effort to avoid management for the better part of my career” and “my experience with project management – it was really off-putting.” Dominic’s comments were less extreme, and he seemed unsure of whether he preferred being an engineer or a manager. Speaking haltingly, Dominic vacillated: “I would definitely take the role of principal [engineer]... I would try to do both.”

The second theme (*the team*, 17 codes) unexpectedly emerged from a question about feelings and motivation to lead but this theme may make sense because the team is what these managers have feelings about. Together these responses paint a picture of what these engineering managers are excited about: a self-sufficient team that is doing

well, and needs only minimal attention from the manager. The coded responses incorporating this theme came only from Carl. However, in the global analysis following question 13, this same theme is found in responses to other questions from all six of these engineering managers. The most striking aspect of Carl's responses is how after years of avoiding management, he now has strong feelings of ownership and pride of the team he leads. These ideas are seen in his statements: "what comes to mind is being there for my guys," and "we're like a well-oiled machine."

The third theme (*strong emotions*, 11 codes) concerns strong emotions that are sometimes felt by these engineering managers. Together these responses seem to portray an array of negative emotions which may explain, in part, why these engineering managers would prefer to return to being engineers. Carl, Darnell, Dominic, and Owen all spoke of experiencing strong emotions in their new leadership roles. Carl, Darnell, and Owen mostly spoke of frustration, as illustrated by Owen "there is also some frustration of 'this is busywork I have to do' that I don't enjoy." In contrast, Dominic spoke of a wider array of emotions noting "a constant battle" and emotions he does not understand: "there is this weird emotion that comes up."

The fourth theme (*respect*, 7 codes) portrays the nature of both respect and disrespect felt by engineering managers. Together, these responses portray a desire for respect, and an understanding of how respect relates in their context to possession of wisdom and knowledge. Only Owen spoke of this theme, but it was clearly important to him. In fact, Owen noted it was one of the aspects of leadership he enjoyed most: "Well it's nice to know that you're looked to for guidance, looked at with respect in that position."

The fifth theme (*desire to teach and mentor*, 7 codes) summarizes an enjoyment of teaching and mentoring as a manager. This theme describes a critical process in the knowledge-based field of engineering in which the leaders are motivated by the act of passing knowledge to the next generation. In response to question 1, only Carl brought up this topic, with statements such as "my favorite part of doing this job is mentoring younger guys" and "I'm happy to be doing that kind of mentoring." However, this theme also emerged in responses from Darnell and Owen to the general question *why lead?* In fact, when considering the interview as a whole, apart from the coding process, the role as teacher and mentor seems to be a critical motivator for these engineering managers, and it may be that the teaching-mentoring should be placed alongside Chan and Drasgow's (2001) three motivations to lead (affective-identity, social-normative, non-calculative).

The sixth theme (*enjoy leading*, 5 codes) relates to deriving enjoyment from leading. This theme included five codes which paint a picture of leaders who like being leaders, not only because of what they accomplish as leaders, but because they simply enjoy leading for its own sake. The responses from Darnell, Malcolm, and Owen included this theme. Referring to a leadership experience in college, Malcolm said "I really enjoyed that experience." In describing the feelings, he experiences as a leader, Owen said "they are usually good." And Darnell said plainly that he "likes being in charge." As such, this theme reflects the affective component of Chan and Drasgow's (2001) affective-identity MTL.

Question 2: Self-Identity

Question 2 was designed to explore the identity aspects of Chan and Drasgow's (2001) affective-identity MTL and resulted in the identification of three themes related to self-identity. The first theme (*identity as engineer*, 9 codes) suggests that these engineering managers have retained their identities as engineers and have not experienced a significant identity change since transitioning into management. Darnell, Jerrell, and Dominic all articulated this idea, with perhaps Dominic being the clearest: "I don't identify with being super-manager guy." However, Carl said he sees himself as both an engineer and a manager, but experienced only a slight change of identity. As such, there was little evidence for the identity aspect of Chan and Drasgow's affective-identity MTL in this small sample ($N=6$).

The second theme (*identity struggle*, 5 codes) is closely related to the first, and relates to a struggle of identity caused by a change in role from engineer to manager. The salient phenomenon appears to relate to a change in standard of self-evaluation. That is, an engineering manager can no longer demonstrate his worth by the standards he used as an engineer. Only Dominic's responses touched upon this theme, however, this was clearly a significant issue with Dominic as he brought it up in response to both questions 1 and 2, using the expression "battle with" in response to both questions.

The third theme (*aspire to management*, 3 codes) is somewhat opposite of the first two. While the first two themes apply to engineers pulled into management against their will, this third theme emerged from engineers who had ambitions to enter management. The presence of this theme is helpful because it highlights that, in spite of the strong emotions captured in the data by some of these engineering managers, not all engineers are opposed to going into engineering management. Indeed, some actually aspire to it, while others work to avoid it. Malcolm and Darnell both spoke of aspiring to leadership. Malcolm said, "I think I've always had some interest in leading." Similarly, Darnell said, "I think it's something I've always wanted to do."

Question 3: Moral Obligation

Question 3 was intended to explore the moral-normative aspects of Chan and Drasgow's (2001) social-normative MTL and was therefore designed to explore if these engineering managers felt a moral obligation to assume their leadership roles. The analysis of the responses and codes for question 3 revealed three themes. The first theme (*no moral obligation*, 6 codes), suggests these engineering managers experienced no sense of moral obligation to become managers. One striking aspect of the responses is that they were short and none of the respondents seemed to feel a need to justify their answers, presumably because they believed them to be obviously correct. This theme was present in the responses from Carl, Darnell, Jerrell, Dominic, and Owen. Carl was, perhaps, the clearest on the theme: "I mean definitely not any moral obligation." As such, there was no evidence supporting the moral component of Chan and Drasgow's social-normative MTL in this small sample ($N=6$).

The second theme (*alternative obligations*, 7 codes) summarizes the notion that when asked about moral obligation, some of the participants identified obligations other than moral, specifically family obligations, an obligation for self-improvement, and an obligation to protect their investments. Together these responses suggest that these engineering managers acknowledge the concept of obligation, provide relevant examples of obligation, while denying the relevance of *moral* obligation as part of motivation to lead. This theme existed in the responses from Darnell, Jerrell, and Malcolm.

The third theme (*morality*, 7 codes) results from Owen and Dominic who misunderstood the question. While the question posed had to do with moral obligation to become a leader, these two spoke about how questions of morality might confront a leader. Specifically, they said that (a) leaders will be confronted with a variety of moral challenges which must be addressed as moral issues and (b) leaders possess and should use, their influence to positively impact the morality of the organization they lead.

Question 4: Social Obligation

Question 4 explored the social aspects of Chan and Drasgow's (2001) social-normative MTL and the analysis of the responses and their codes for question 4 identified three themes. The first theme (*nature of social obligation*, 9 codes), paints a picture of social obligation as something that is barely recognizable prior to becoming a leader, but after becoming a leader, it is noticeable and feelings of guilt would accompany stepping out of leadership. The responses for Carl, Dominic, and Owen included this theme. As such, this theme seems to reflect the social component of Chan and Drasgow's social-normative MTL.

The second theme (*obligation for the best candidate to lead*, 10 codes) is that some of these engineers accepted leadership roles once they realized they were the best candidate. Interestingly, these codes seem to speak of a social obligation even though these leaders were not willing to identify social obligation as a reason they accepted their roles. Furthermore, it is important to note that these claims all reference the best managerial candidate to lead as opposed to the best engineer. Carl and Dominic both touched upon this theme.

The third theme (*obligation to teach and mentor*, 13 codes) is that some of these engineers saw an obligation to teach and mentor the younger engineers. Together these codes suggest that these engineering managers clearly recognize an obligation to teach younger engineers, although this obligation is not limited to managers, and instead applies to all engineers. Carl and Owen each touched upon this theme.

Question 5: Personal Gain

Question 5 was designed to explore Chan and Drasgow's (2001) non-calculative MTL and was designed to determine if the potential for personal gain influenced the participants' decision to accept engineering leadership roles. As the responses and codes for question 5 were analyzed, two themes emerged. The first theme (*money not motivation to lead*, 9 codes) incorporates responses related to the role of money in these engineering managers' decisions to accept a management role. This suggests that for these engineering managers, money is not a motivation to lead; however, they are clearly appreciative of the money they make. The responses from Carl, Dominic, Jerrell, and Owen each contained this theme. When asked if money is a motivation to lead, Carl stated, "As little as you could imagine," Jerrell stated, "No, not really," and Dominic said, "I don't think this has been a driving factor for me." As such, these responses support Chan and Drasgow's notion of a non-calculative MTL.

The second theme (*good move for me*, 7 codes) relates to the move to management being good for themselves and their careers. Together, these codes paint a picture of engineering managers who recognize that the move to management represents a personal accomplishment that will likely further their career. This theme existed in the responses from Darnell and Malcolm.

To resolve the obvious contradiction between the first and second themes, it may be noted that the respondents for the first theme were Carl, Jerrell, Dominic, and Owen whereas the respondents for the second theme were Darnell and Malcolm. Some of Darnell's responses fit neither theme, and focused on his enjoyment of being a

leader (like being in charge, like being responsible, like making decisions). Taken together, it seems that the proper conclusion is not that engineers are, or are not, motivated by personal gain, but rather that there is significant variability in the motivations of these engineering managers. That is to say, some engineering managers are motivated by personal gain, some by a love of managing, and others by an idealism that is repulsed by leading for personal benefit.

Question 6: Achievement-Power

Question six was designed to explore Clemmons and Fields' (2011) notion of Self-Enhancement Value and how a sense of power and/or a sense of achievement affect the respondents' motivation to lead. In analyzing the responses and codes for question 6, three themes emerged. The first theme (*effectiveness of power*, 8 codes) incorporates four codes which suggest a manager's power is limited and four which suggest that a manager's power is useful. Combined, these eight codes seem to identify two extremes regarding a manager's power. Managers wishing to make great change may find they, and everyone else in the organization, lack the power to make any unilateral change. However, new managers, wishing to make small change, may find their new authority enables them to make changes previously out of reach. The responses from Darnell, Jerrell, and Malcolm each touched upon this theme.

The second theme (*leadership as achievement*, 7 codes), deals with the question *is becoming a manager a significant achievement?* Together these codes suggest that some of these engineering managers do not view becoming managers as a significant achievement. The codes from Darnell support this (I expected to progress, climbing that curve), adding the color that for him, becoming a manager was uneventful; what would have been an event would have been failure to become a manager. It should be noted that one of Owen's responses was coded as sense of achievement, however, in context, this response is not referring to the achievement of becoming a manager, but rather achievements accomplished while a manager. Carl, Darnell, and Jerrell touched upon this theme in their responses.

The third theme (*discomfort with power*, 8 codes) relates to discomfort with the use of power and was described only by Dominic. Taken together, these coded responses paint a picture of a manager who wants to rely on Raven and French's (1958) expert and referent power, avoiding all forms of coercion. Although the reluctance to use coercive power is admirable, the manager may be unnecessarily uncomfortable with the authority that accompanies his role. Only Dominic spoke of a discomfort with power. Overall, none of these six engineering managers seemed to relate to Clemmons and Fields' (2011) notion of Self-Enhancement Value as motivation to lead.

Question 7: Benevolence

Question 7 was intended to explore Clemmons and Fields's (2011) notion of Self-Transcendence Value, and the analysis of the coded responses suggested two themes related to benevolence. The first theme (*feelings of benevolence*, 9 codes) relates to whether or not these engineering managers experienced feelings of benevolence. Interestingly, Carl, Darnell, Jerrell, and Malcolm said they have experienced such feelings while Dominic and Owen said they have not. Taken together, this analysis suggests that having a sense of benevolence is something some of the managers experienced and some did not. The responses from all six participants included this theme.

Whereas the first theme considered the feelings of benevolence, the second theme (*actions of benevolence*, 10 codes) relates to benevolent actions performed by these engineering managers. It should be noted that although neither Owen nor Dominic reported feelings of benevolence, both reported actions which were coded for this theme (I try to help followers, I focus on enabling others). In total, these responses portray engineering managers who behave benevolently by helping and protecting their employees. Carl, Malcolm, Dominic, and Owen each addressed this theme in their responses. Combined, the two themes seem to reflect Clemmons and Field's (2011) notion self-transcendence as a motivation to lead.

Question 8: Influential Individuals

Question 8 was designed to explore Guillén et al.'s (2015) self-to-leader comparisons. The analysis of the responses and the codes for question 8 identified four themes. The first theme (*influential from a distance*, 15 codes) involves observing leaders at the company from a distance. Together these coded responses suggest that some of these engineering managers were motivated both to lead, and to become better leaders by watching other leaders at their company. This theme was evident in the responses from Jerrell and Malcolm.

The second theme (*influenced nearby*, 5 codes) is closely related to the first, and involves the influence from one's own manager. The distinction here is that theme 1 involves watching other leaders from afar whereas theme 2 involves the direct influence these managers felt as they were led by their own supervisors. These responses suggest a propagating effect of leadership. That is, as these engineers were led effectively, they developed a desire to be a leader themselves. The responses from Malcolm, Dominic, and Owen included this theme. When combined, these first two themes seem to reflect Guillén et al.'s (2015) self-to-leader comparisons as motivations to lead.

The third theme (*absence of positive influence*, 7 codes) describes the idea that some of these engineering managers have worked in the presence of either negative role models or no role models. Owen and Jerrell spoke of specific negative examples while Carl spoke of the lack of a positive influence. Combined, the data suggests a positive influence emanating from observing the lack of a positive example. This suggests encouraging potential leaders to observe poor leadership around them may fuel their desire to become leaders themselves. The responses from Carl, Jerrell, and Owen each addressed this theme.

Question 9: Excel as Leader

Question 9 was based on the concept of leader self-efficacy from Rosch et al. (2015) and explores how the realization they are good leaders interacts with their motivation to lead. Although there were several topics discussed at length by specific participants, only one theme discussed by multiple participants emerged from the analysis of the response and codes. This theme (*success as a leader creates additional motivation to lead*, 10 codes) relates to the notion that as leaders experience success, they experience an increased desire to lead. Malcolm captured the essence of this theme by noting that, “Generally people tend to stick to what they are good at.” Together these responses create a clear picture that the experience of success creates additional motivation to lead. This suggests the importance of putting new leaders into situations in which they are likely to experience success. The responses from Darnell, Jerrell, Malcolm, Dominic, and Owen each included this theme, which seems to reflect Rosch et al.’s finding of leader self-efficacy as motivation to lead.

Question 10: Excel as Engineer

Question 10 was based on the finding from Cho et al. (2015) that a basic need for competence correlates with motivation to lead. Accordingly, the goal was to learn about how their sense of technical competence as an engineer interacted with their decision to accept engineering leadership roles. While analyzing the responses and codes for question 10, two themes emerged. The first theme (*engineering skill as motivation to lead*, 5 codes) relates to the relationship between having engineering skill and wanting to lead. Interestingly, this topic emerged as a theme but there was not agreement whether engineering skill contributes to motivation to lead. Darnell and Jerrell described a positive impact of engineering skill on motivation to lead. However, Owen stated the opposite, that engineering skill was not a motivation to lead and that engineering skill affects one’s style but is not a motivation to lead. Owen’s responses were consistent with the first theme from question 1, preferring to work as technical experts rather than as managers. Taken together, the data seems to suggest that while in some cases excellent engineering skills contribute to motivation to lead, certainly those skills do not translate into motivation to lead in all cases. As such, it appears that for some, but not all, engineering managers, engineering skill is a motivation to lead. As such, this reflects the notion from Cho et al. that competence can be a motivation to lead.

The second theme (*engineering skill is necessary to lead*, 9 codes) is closely related to the first: although engineering skill does not motivate these engineering managers to lead, it is necessary for them to lead well. Together, these responses demonstrate that these engineering managers consider engineering skill as an essential qualification for leading engineers effectively. This theme was included in the responses from Carl, Dominic, and Owen.

Question 11: Relatedness

Question 11 was also based on the findings from Cho et al. (2015), but unlike the previous question, this question focused on how a basic need for relationships correlates with motivation to lead and explored the interaction of a sense of relatedness and the participants’ motivation to accept leadership roles. When analyzing the responses and codes for question 11, two themes emerged. The first theme (*leading friends*, 7 codes) concerns the experience of leading people who are your friends. When taken together, these responses describe how leading friends is generally easier than leading strangers. However, these responses also suggest that assuming leadership over existing friends can be difficult because becoming their leader necessarily changes the relationship. This theme existed in the responses from Darnell and Owen.

The second theme (*relatedness not motivation to lead*, 4 codes) addresses the relationship between motivation to lead and relatedness. Together, these responses suggest that these engineering managers did not consider existing relationships as a reason to accept a leadership role. However, it should be noted that this conclusion does not suggest these leaders were not concerned for the team. It merely suggests that the level of existing relationships was not a determining factor, hence for the two engineers who spoke to this theme, (Jerrell and Dominic), Cho et al.’s (2015) sense of relatedness was not a motivation to lead.

Question 12 (emergent): Why Lead?

Although the interview guide did not call for it, I found myself spontaneously asking, *why did you accept a leadership position?* during five of the six interviews; this is accepted practice in qualitative research (Patton, 2015; Padgett, 2008). The analysis of the responses and codes for question 12 produced two themes. The first theme (*good move for me*, 9 codes) involves the idea that being a leader is somehow good for the manager. Together these codes present a picture of wanting to lead because of the benefits of leading. These benefits include provision of a new opportunity, enjoyment of teaching, and enjoyment of problem solving. This is to say, that this theme describes a perception that being a leader brings a wide array of benefits. Darnell, Jerrell, and Malcolm each touched upon this theme in their responses.

The second theme (*good at leading as motivation to lead*, 5 codes) indicates that these engineering managers lead partly because they believe they are good at it. Together these codes suggest that the belief that they are good at leading motivates these engineering managers to lead. Also, this theme is similar but not identical to the theme from question 10, success as a leader creates additional motivation to lead, in that the present theme reflects a belief that the leader is a good leader whereas the question 10 theme reflects experiencing success. This theme was included in the responses from Malcolm, Dominic, and Owen.

Question 13 (emergent): What Else?

I concluded each interview by asking if there was anything else the participant would like to say. In analyzing these responses and codes for question 13, one theme emerged, although this theme was mentioned only by Malcolm. This theme (*leadership is a challenge*, 3 codes) reflects a view that sees leadership as a challenge. Hence for Malcolm, challenge creates a motivation to lead.

Although this is not a theme, it is important to note that the responses for this question indicate the thoroughness of the interview. When given the chance to add detail concerning their motivation to lead, Carl, Jerrell, Dominic, and Owen each indicated they had nothing to say, as captured in four codes.

Integrated Analysis

Although the technique of analyzing the data question-by-question produced significant insight, there remains a question as to what might have been lost by isolating the responses to each question. This issue is similar to the reason *explication* is preferred to *explanation*; that is, it addresses the whole as the whole. Fortunately, because all the data was analyzed using a single NVIVO project, obtaining such global results was relatively simple and provided significant additional insight. For this analysis, the in vivo codes were grouped into thematic codes. Next, thematic codes which had obvious commonality were grouped into larger mega themes. Four such mega themes were identified.

The first mega-theme (*preference not to lead*, 62 codes) encompasses the in vivo codes associated with the themes for ambivalence about leading, avoided management, do not want to lead, do not like managing, not aspire to leadership, prefer mixed role, and prefer to remain technical. Carl spoke of his perceptions of being a manager: “my encounters with upper-management and the interaction with managers made me think that that wasn’t really something fun,” and “And I never really had motivation to climb the corporate ladder in that way.” Dominic spoke of preferring engineering because it was more fun: “I definitely prefer to be doing, you know, fun stuff.” As such, this mega-theme suggests that these engineering managers generally prefer roles as individual contributors over roles as managers. And, when required to be a manager, these engineering managers prefer to continue contributing as engineers while also trying to manage others. This mega-theme was evident in the responses by Carl, Dominic, and Owen.

The second mega-theme (*concern for the team*, 59 codes) includes the themes of advocating for the team, concerned with feelings of the team, desire to not impede team, desire to get out of the way of team, identity as enabler of team, knowing the team, not wanting to fail the team, wanting to prevent the wrong leader, willingness to take a bullet for the team, and consideration of the team. Carl spoke with obvious pride in his team: “I know exactly who I have; we’re like a well-oiled machine.” Dominic also spoke with pride: “But with the group we have now, I feel a sense of pride.” Darnell was concerned with disappointing the team: “I would not want them to be disappointed.” Jerrell spoke of wanting to take the job so a less competent person does not: “I’ve seen bad quality managers, and I’ve seen good quality managers. And I know a bad quality manager can really harm an operation.” Together, the mega-theme suggests these engineering managers tended to accept their roles in light of and because of the people on the team. This is to say that these same managers may have turned down their invitations into leadership had a different team been involved. This mega-theme was included in the responses from all six participants.

The third mega-theme (*desire to teach and mentor*, 30 codes) includes the themes of enjoy teaching, like to mentor, obligation to help, obligation to teach, and paying back debt. For example, Darnell spoke of enjoying mentoring “I like to share my knowledge,” and Owen spoke of an obligation to mentor “I need to help them develop.” Carl spoke of mentoring with more than just engineering knowledge: “So, like those guys came to me with questions.

I answered the questions, and they're not always technical – maybe documentation questions, or this or that, drawing on all my experience and helping them out. You know, teach them ... that part I really enjoyed.” Carl, Darnell, and Owen each included this theme in their responses.

The fourth mega-theme (*strong emotions, 18 codes*) suggests that these engineering managers often experience strong negative emotions in their role. These negative emotions include frustration, struggles with identity as engineer or manager, and other emotions such as jealousy and territorialism. Together, this mega-theme suggests the presence of emotions which may motivate these engineering managers to abdicate their leadership roles to return to their more comfortable role as engineers. This suggests the importance of equipping new engineering managers to deal with such emotions. This mega-theme existed in the responses from Carl, Darnell, Dominic, and Owen.

Discussion

The study was designed to answer the question: *What is the motivation to lead of engineers who have recently transitioned into leadership roles?* And because the interview guide was created based on eleven components of motivation to lead found in the literature, it is not surprising that the analysis supported seven of the eleven components on which the interview guide was based. Specifically, the analysis showed that first, some of these managers simply enjoy leading. Second, some felt a social obligation as the most qualified to lead. Third, while some found motivation in money and other tangible benefits, others found motivation to lead in a non-calculative purpose greater than mere money. Fourth, some of these managers were motivated by a sense of benevolence; that is, that they were motivated by the belief that by accepting their role, they were selflessly helping the organization. Fifth, some of these managers found motivation to lead by observing effective leaders throughout the organization. Sixth, most of these managers reported a snowball effect where success at leading created additional desire to lead. And seventh, some of these managers described their expertise as engineers as providing motivation to lead.

Of interest, however, are the four components of motivation to lead which the analysis did not support (moral obligation, identity as leader, desire for achievement and power, sense of relatedness). Of course, the lack of support for those four components may be due entirely to the small sample size ($N=6$). However, the lack of evidence for these four components may speak to how engineers differ from the general population. Accordingly, there seems to be a need for a follow-on quantitative study of motivation to lead in which the motivation to lead of engineers is compared with the motivation to lead of non-engineers. It seems that such information could be useful to practitioners faced with the prospect of recruiting engineers into management roles.

Having addressed the eleven components of motivation to lead suggested from the literature, it may be that the most important finding of this study is that a desire to teach and mentor appears to be an important motivation to lead for some of these new engineering managers. As previously noted, this mega-theme emerged during both the analysis of the question 1 responses and during the integrated analysis. Furthermore, as I conducted the interviews, the recurring mention of enjoyment of and desire to teach and mentor was the most striking aspect of the interviews. For this reason, I recommend a follow-on quantitative study to determine if teaching-mentoring MTL (TM-MTL) should be added to Chan and Drasgow's (2001) triad of motivations to lead (affective-identity, social-normative, non-calculative).

In addition to these findings, which contribute to our theoretical understanding of motivation to lead, the analysis identified three themes which have implications for practice. As such, these findings could be particularly useful in developing training for potential engineering managers. That is, they could provide insight as to key areas of focus for training both within the university setting and within industry.

First, the most dominant theme and mega-theme is that half of these managers prefer not to lead. That is, the affective component of motivation to lead is entirely absent. This has major implications for the training of potential engineering managers. Specifically, it suggests that such training must address the simple question: *Why should an engineer want to become an engineering manager?* In other words, such training should devote considerable time attempting to help these potential engineers desire to become engineering managers. Additionally, it appears that further study is warranted to understand what is behind this observed lack of desire to lead. It is theorized that this negative preference stems from (a) pervasive misperception of the importance of effective engineering management, and (b) negative stereotypes propagated by popular culture, for example the Dilbert cartoon strip.

Second, the mega-theme of *concern for the team* is interesting. It appears that such concern for the team may hold the largest potential for helping prospective engineering managers develop a desire to lead. For this reason, it is argued that training for potential engineering managers should be designed to tap into this motivation. Specifically, it is proposed that focusing on a concern for the team may be the most effective approach for helping prospective engineering managers develop a desire to lead.

Third, the mega-theme of *strong emotions* is an interesting finding as strong feelings of frustration, identity struggles, and other “weird emotions” (Dominic) emerged as themes. The potential significance of this theme is

highlighted in a few observations related to the participants' non-verbal responses to the question about feelings. For example, in response to question 1, Malcolm immediately said, "Emotions, feelings, huh?" Likewise, after attempting to answer the question, Dominic seemed to indicate discomfort with the question: "I don't know if that even answers the right question." There appears to be, then, a common discomfort with felt emotions and even with discussing felt emotions. For this reason, it is argued that training for prospective engineering managers should be designed to help them anticipate and understand the kind of emotions they may experience as managers. This may be particularly strategic in that it seems unreasonable to adopt positive feelings about wanting to lead in the midst of experiencing bewildering negative emotions.

Conclusion

A phenomenological inquiry into the motivation to lead in a sample of six engineering managers was conducted and described. In doing so, this research contributed to the literature by (a) corroborating seven of eleven components of motivation to lead previously found in the literature, and (b) identifying a previously undescribed motivation to lead: motivation to teach and mentor. However, a quantitative study is needed to determine if this finding is generalizable. Furthermore, three implications for practice were identified, each of which could guide practitioners interested in developing engineering managers. Further study is warranted to understand why four of the eleven motivations to lead described in the literature were not corroborated; this may be due to the small sample size or it may provide a description of how the motivation to lead of engineers differs from the general population.

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