Leader-Member Relationships in Virtual World Teams

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Abstract
As researchers today seek to understand how virtual worlds may be effectively leveraged for collaborative purposes, exploring the role of leadership in virtual world teams may help shed light on how to manage synchronous and highly interdependent work activities for better team outcomes. Based upon Leader-Member Exchange (LMX) Theory, this study seeks to understand how leadership affects team member performance. We propose that 1) the relationship between a leader and a team member influences the degree to which a team member is allocated and develops resources and 2) to the extent which a team member receives or develops resources, their performance will be enhanced.

Through a longitudinal field study of one large virtual world team in the massively-multiplayer online-game Everquest, the findings strongly suggest that the leader-member relationship does impact members’ allocation and development of resources. Furthermore, it is the quantity and the type of resources that impacts performance, not the leader-member relationship.

1. Introduction
Advances in computer-mediated communication (CMC) technologies have brought about rapid changes in the workplace. The last two decades have seen an IT-enabled move away from traditionally organized firms to networked firms where work is performed by virtual teams [23]. Virtual teams are typically comprised of domain-specific subject matter experts from a variety of functional areas and are coordinated through the use of CMCs [30]. Recently, new ways to collaborate via technology have emerged that warrant investigation. For instance, how and where work is accomplished is being shaped by participation in new CMC environments such as virtual worlds.

Virtual worlds are IT-enabled virtual environments in which participants communicate and interact via digital embodiments representing themselves, or avatars. Virtual worlds have rapidly emerged as a means of communicating, collaborating, and organizing economic activity [41]. This new environment presents an intriguing opportunity for examining virtual world teams (VWTs), or teams which collaborate via the use of avatars.

While team collaboration via different CMCs has been studied extensively in the virtual team literature, team collaboration within VWTs offers an intriguing twist. VWTs are similar to virtual teams in that communications occur through CMC, and the individuals behind the avatars are not typically physically collocated. However, VWTs have much in common with face-to-face teams in that work is accomplished in real-time and in the same meta-place, through collocated avatars.

The literature suggests that managing work in VWTs may not be easy. Kayworth and Leidner [26] observed that “virtual teams are beset with a range of challenges inherent to their dispersed and often impersonal nature.” In an integration of prior literature, Watson-Manheim et al. [45] further proposed that discontinuities, or challenges to group cohesion, can have negative effects on virtual team performance because of geographical, temporal, cultural, and technology-mediated separation between team members. Therefore, VWTs face the same disruptive effects of discontinuities typical in virtual teams, combined with the challenges of face-to-face teams in terms of synchronous coordination.

Paradoxically, many successful VWTs are evident in massively-multiplayer online-games (MMOGs). Daily, millions of globally-dispersed participants connect and collaborate with others by organizing themselves into VWTs of all sorts and sizes. VWTs range from ad-hoc groups to more permanent social structures, such as player-founded organizations or guilds. While activities within MMOGs are guided by the loose structure provided by the game experience [41], there is growing practitioner recognition that these “play” activities mirror many of the attributes of real life work [6, 48, 50].

Much like in real life, leaders within MMOGs are essential to the success of the VWTs they lead [9, 25,
problems [12, 16, 44]. IBM, for example, has begun identifying employees who lead guilds within MMOGs and exploring the applicability of what these employees have learned from their virtual experiences to management practice [20, 21]. In all, 75% of the employees interviewed indicated that the leadership skills they learned within MMOGs have helped them in their real-world settings [36]. This is because unlike real life where leaders are generally more risk adverse, leaders in MMOGs are encouraged, if not outright expected, to experiment with risky and novel strategies and leadership styles to assure virtual team success. Therefore, leadership processes within MMOGs are of both academic and practitioner interest [22].

The purpose of this paper is to understand how to manage VWTs for optimal team performance. The position taken in this research is that the effectiveness of VWTs is predicated on the efforts of individual virtual team members, over which leaders have a great deal of influence. In essence, VWTs require effective leaders to be able to influence members to perform their job duties well. Therefore, the research question motivating this study is: how do leaders influence member outcomes within virtual world teams?

2. Theoretical background

At its core, LMX theory is about relationships; specifically relationships between leaders and their followers [8, 10, 14, 15]. As organizations rely on individuals working together to function, ignoring that relationships develop between individuals and that these relationships have impacts on important organizational outcomes would be unwise [31, 43]. LMX theory recognizes the significant contributions and influence which followers have in the leader-member relationship. For example, the traditional labels “followers” and “subordinates” have been replaced by the more inclusive label “members”. This evolution represents the goal of developing high quality leader-member relationships, in which members work with and not for, leaders [16].

A large body of literature investigating an equally large number of outcomes exists [12]. For example, LMX has been shown to be positively related to objective and subjective performance, satisfaction with supervision, overall satisfaction, job satisfaction, organizational commitment, role clarity, member competence, intentions to stay, innovation, career progress, employee empowerment, and procedural and distributive justice perceptions. LMX may also mitigate certain undesirable outcomes such as turnover intentions, role conflict and ambiguity, and job problems [12, 16, 44].

LMX theory has roots in social exchange theory, role theory, and Vertical Dyad Linkage [8, 10, 16, 19]. LMX theory holds that instead of behaving in the same manner towards all of their followers, leaders behave towards and allocate resources differently to members of their workgroup based upon unique dyadic leader-member relationships [8, 43].

For example, leaders develop high quality relationships with members with whom they have had successful interactions in the past based upon continuing work or social interactions and exchanges. These members are considered part of the “in-group” and enjoy higher levels of trust, support, and formal and informal rewards [10, 15]. These members are offered opportunities not available to others, such as more important organizational roles [17]. In order to maintain a balanced exchange relationship, employees reciprocate by adopting attitudes and behaviors which reflect the support derived from the leader-member relationship. Therefore, increased levels of supervisory support have a positive impact on members’ performance because the norms of reciprocity influence members to perform above and beyond normal job expectations [46].

The opposite also holds - members who have an ineffective working relationship with their leaders, or the “out-group”, receive none of the additional benefits afforded to the “in-group”. Sometimes characterized as “hired hands”, members of the out-group are managed almost exclusively by what is denoted in the formal employment contract, and the influence leaders have on their members is diminished [8, 16]. Naturally, these members are not expected to perform as well as the “in-group” given the lesser support provided and lower expectations held. Uhl-Bien et al. [43] further suggest this is because low quality relationships may negatively impact member motivation, effective communications between leaders and members, and reduced resource allocations such as training and development opportunities.

However, what is not entirely clear from this body of literature are the exact causal mechanisms by which LMX influences these member outcomes. The majority of studies to date have been “LMX plus” studies which sought to relate LMX to organizational outcomes by utilizing research designs employing correlational analyses which failed to properly explain the theoretical underpinnings underlying the leader-member relationship or the choice of outcome variables [39].

Clearly, there remains room for work which addresses this gap and there is a need to study more proximal mediators of the leader-member relationship to member outcomes in order to address how the leader-member relationship affects member
performance. Therefore, a key contribution of this study is the development of a theoretical derivation for causal model of LMX in VWTs. Figure 1 presents the research model.

2.1. Allocation of resources

A key responsibility of leaders is to provide subordinates with the resources necessary to perform their job functions [16, 44, 51]. LMX theory suggests that differential leader-member relationships impact the resources which members are allocated. Members who develop high quality leader-member relationships with their leaders gain greater access to resources. LMX theory suggests several reasons for this. High quality leader-member relationships are the result of a series of positive social and work-related exchanges [28]. As a result of successful exchanges, the leader and member become increasingly interdependent and their relationship is characterized by higher levels of mutual trust, obligation, reciprocity, and support [10, 39]. Members feel like they are increasingly depended on, and high quality leader-member relationships have been associated with greater member perceptions of empowerment and job latitude [12].

Members who do not have strong leader-member relationships have often been categorized as “hired hands” [10, 44]. The resources provided to “out-group” members are scarce, oftentimes limited to what the formal employment contract denotes [8, 10]. Furthermore, these members are also viewed negatively in terms of affect or perceived performance capabilities and are selected for less important organizational roles [10, 17, 39].

When mature partnerships are established, high quality leader-member relationships lead to increased levels of formal and informal rewards, access to, and communication with supervisors, and supervisory support for members [10, 13]. For example, members gain access to their leader’s network of resources, receive better job assignments, and are chosen to fill more important organizational roles [12, 16, 17]. The allocation of resources may be both perceived and observed by members. Therefore,

H1: A higher quality leader-member relationship will positively influence the degree to which a member perceives that they are allocated resources.

H2: A higher quality leader-member relationship will positively influence the degree to which a member is allocated tangible resources.

2.2. Development of resources

Graen & Uhl-Bien [16] suggest that LMX theory may be viewed as both transactional and transformational, with leader-member relationships that achieve the partnership phase being transformational. Transformational leadership suggests that “effective leaders transform or change the basic values, beliefs, and attitudes of followers so that they are willing to perform beyond the minimum levels specified by the organization.” [34]. Transformational relationships or leadership may be especially useful in virtual settings [2, 3]. This is because members, when faced with having to communicate via CMCs, develop high levels of uncertainty due to discontinuities, and are more susceptible to charismatic leadership influence. For example, transformational leaders in virtual teams can help unite team members to work towards a common cause, which leads to less free-riding [52].

One way to understand the transformational impact of high quality leader-member relationships is to examine the development of relational capital [43]. Relational capital is a resource created by relationships developed through repeated interactions [31]. Following Nahapiet and Ghoshal [31], relational capital consists of four dimensions: trust, norms, obligations, and identification.

High-quality relationships help transform self-interest to a larger interest for three reasons. First, transformational leaders exhibit specific behaviors to encourage followers to buy-in to collective goals in order to achieve extraordinary goals [1]. For example, transformational leaders exemplify core beliefs and ethics, communicate achievable goals and an optimistic future, and instill the of value higher-order ideals [1]. These behaviors form the basis of the “role-making” process in LMX theory by which high quality leader-member relationships are developed [16].

Second, a high quality leader-member relationship, facilitated by high levels of mutual trust, respect, and obligation may be viewed as a source of influence [39, 44]. Not only must higher-order ideals be transmitted through the relationship, but influence is necessary to achieve member buy-in. Third, these ideals are internalized by members in two ways 1) by a social exchange mechanism in which members feel obligated to reciprocate the support received from the relationship by adopting the same beliefs and goals as the leader [46] or 2) as a result of when leaders successfully tie group efforts to the collective identity of the group [40].

Therefore, by the mechanisms discussed above,
H3: A higher quality leader-member relationship will positively influence a member’s level of trust with the VWT members.

H4: A higher quality leader-member relationship will positively influence a member’s level of obligation to the VWT.

H5: A higher quality leader-member relationship will positively influence a member’s awareness of the norms of a VWT.

H6: A higher quality leader-member relationship will positively influence a member’s level of identification with the VWT.

2.3. Member performance

Performance is commonly measured as perceptions of an individual’s quality, quantity, timeliness, and effective performance of their job tasks or roles [5]. The development of human capital at the individual and collective levels has a large impact on organizational effectiveness and performance [4, 43].

As discussed earlier, a key responsibility of leaders is to provide subordinates with the resources necessary to perform their job functions and LMX theory suggests that resources allocated to members with high quality leader-member relationships include increased informal and formal rewards, better job assignments, more job latitude, increased communication and access to information, and better access to resources in the leader’s network. These resource allocations may be both perceived and observed and naturally receiving a higher allocation of these resources allows one team member to outperform others. Therefore,

H7: Higher member perceptions of resource allocations will positively influence member performance.

H8: Higher tangible resource allocations will positively influence member performance.

Relational capital resources (trust, norms, obligation, identification) are developed from the relationships and repeated exchanges occurring within the VWT [31]. These relationships have strategic implications for the management of people as a resource. Relational capital binds VWT members together in relationships characterized by mutual trust, obligation, and identification, under established norms that regulate the interactions between members and determine how things should work. As members develop higher levels of relational capital, this allows for individuals to move beyond self-interest and work effectively as a team. This collective interest is what motivates individuals to work above and beyond the minimum levels specified [34].

For example, trust facilitates the sharing of ideas [53] and aids in knowledge sharing and the
development of transactive memory [38]. This helps reconcile differing goals and conflicts within virtual teams while reducing opportunistic behavior and agency costs, directly impacting member performance [24]. For example, in VWTs, information exchanges are facilitated by trust and knowing who to ask for advice. Oftentimes, when stuck on a quest or unsure of how game mechanics work, VWT members turn to each other for help. Therefore, when VWT members trust each other enough to ask questions to clarify their role, or about how to improve their performance, their performance will be improved. Therefore,

**H9:** Higher levels of trust in VWT members will positively influence member performance.

Higher levels of obligations impact member performance because members feel a responsibility to provide aid to other members due to the development of personal, professional, and exchange relationships [31, 43]. In VWTs, obligation impacts member performance due to the voluntary nature of participation in MMOGs. Without a strong sense of obligation, members may free-ride or cease participation entirely by not attending raids. Members who feel obligated to the VWT show up more consistently for VWT activities, go above and beyond the minimum requirements expected, and perform better. Therefore,

**H10:** Higher levels of obligation to the VWT will positively influence member performance.

Norms impact member performance by establishing expectations about how work should be performed and evaluated. Additionally, knowing how work should be performed allows for the enactment of roles. For example, on virtual teams which are commonly comprised of subject matter experts from different functional areas, work is divided by expertise and specialization of labor occurs. If the purpose of the virtual team is to introduce a new product line, engineers are responsible for designing, manufacturers building, while marketers are in charge of advertising and selling. In VWTs, norms about what is expected from members also allow for more effective activities when members have clear expectations on their job roles, what is to be done, and how their performance will be evaluated. Therefore,

**H11:** Higher awareness of the VWT's norms will positively influence member performance.

Identification with a collective positively influences member outcomes in several ways. First, higher levels of identification enhance member concern for collective processes and outcomes – the more one identifies with a collective, the more motivated one is to work harder on an individual level for collective benefits [31, 43]. In the virtual team literature, numerous scholars have remarked that building team unity and identity are key inputs for the success of virtual teams [18, 29, 33, 35]. Members of VWTs commonly place high value on VWT identification. Outsider perceptions about the VWT such as guild reputation, success, and accomplishments strongly motivate members to perform better. Therefore,

**H12:** Higher levels of identification with the VWT will positively influence member performance.

3. Methodology

The unit of analysis for this study is the individual guild member in a MMOG, where a guild is an example of a VWT. Our population of interest included guilds which primary purpose was to raid. A raid is a large-scale, real-time collaboration by members of a VWT towards a common goal. Raids have objective goals (e.g., slay the dragon) and require the coordination of a guild’s resources to successfully complete in order to reap the rewards (e.g., loot).

Success or failure depends heavily on the human capital available to guilds [47]. For example, class balance, or having individuals with the appropriate skill sets is key. Effectively coordinating the synchronous and interdependent activities of individuals on a raid is likewise crucial as the gaming environment may be incredibly chaotic and complex [47, 50]. Therefore, raiding-oriented guilds share many similarities with face-to-face teams in real-world organizations in terms of makeup, shared sense of purpose, and the interdependent nature of how work is performed [6, 11, 47].

The research agreement with the VWT chosen for this study provided access to members of the VWT in the MMOG Everquest, as well as sources of objective data. In all, 61 usable responses were collected out of a total of 68 possible respondents in the sampling frame, an 89.7% response rate. On average, subjects were 33.62 years old, had 9.1 years of MMOG experience, has been with the sample VWT for 2.5 years, and spent 27.69 a week in Everquest. The sample was 77% male, with 91.8% having some college or higher education, and 86.9% being employed in real-life.
Data collection spanned an eight week time frame. Figure 2 graphically summarizes the data collection procedure. At the beginning of the time frame, data about the leader-member relationship and demographic and control variables were collected. The guild leader assessed his/her relationship with guild members based upon a spreadsheet version of the instrument facilitated by e-mail. Guild members assessed their relationship with the guild leader, and self-reported demographic and control variables via a web-based survey.

For the first five and a half weeks, snapshots of group compositions within raids were collected by the principle investigator who actively participated on guild raids. This data was collected by using the built-in guild organization tool in the Everquest client and exported to a text-based log. Data collection was event-driven - snapshots of group compositions were taken to coincide as closely as possible with entries in the DKP (Dragon Kill Points) database. The DKP database can be thought of as a compensation system for the guild. Members are awarded DKP points for hourly attendance and the successful completion of raids. These points may then be redeemed to purchase items for their avatars from raids. In all, 124 usable snapshots were obtained out of a total possible 157 DKP entries (78.9%). Based upon the hourly DKP entries, the guild spent an average of 21.45 hours per week during this time frame on raiding activities. As each raid was attended by an average of 51 members, this sampling frame captures approximately 6,000 avatar-hours of work.

Following this five and a half week period, responses to the mediating and self-reported performance variables were collected from guild members via a web-based survey. In order to triangulate individual performance from a variety of perspectives, data were collected from members, peers, and leaders. Peer-rated performance data was collected via web-based survey by guild members who performed the same job functions on raids as the subjects being assessed (n=23). Additionally, the guild leader and 6 out of 7 guild officers assessed every guild member’s individual performance via spreadsheets facilitated by e-mail. An overall individual performance measure was created by calculating the weighted average of individual (33%), peer (33%), and leader-rated performance (33%).

Previously validated measures were used for LMX [16], empowerment [42], trust [23], obligation [31], norms [31], identification [27], and performance [5] using a 1 – 5 (strongly disagree to strongly agree) Likert scale. Where necessary, the items were adapted to the research context. Two constructs warrant further explanation.

First, the leader-member relationship was measured using the LMX-7 items [16]. While there is significant debate over the measurement and dimensionality of LMX [39], LMX-7 has been used extensively and is a commonly accepted uni-dimensional measure [12]. However, our approach diverges from many past studies which measure only perceptions of the relationship from one party: either the leader or member [12]. Our LMX construct is the average of the perspectives of both the leader and members. This is because while expedient for data collection, what past studies neglect, theoretically, is the dyadic nature of the leader-member relationship [39].

There is, however, evidence that suggests that leaders and members do not always agree on their assessment of their relationships. For example, in their seminal meta-analysis, Gerstner and Day [12] found that the leader-member agreement about LMX quality, while significant, had a sample-weighted correlation of only 0.37. Therefore, prior to computing the LMX measure used for this study, we established that the individual perspectives were strongly correlated ($r=0.62$) and conducted an exploratory factor analysis (EFA). The EFA revealed that the LMX items from both perspectives exhibited factor loadings exceeding 0.7 on the same factor suggesting convergent and discriminant validity. Therefore, we felt confident in combining the LMX measures to better assess the overall dyadic leader-member relationship.

Second, the group assignment variable was created using the following rubric provided by a panel of six active VWT participants. Optimal groups are groups which have a mix of classes which complement each other and/or contained veteran (experienced) members. Suboptimal groups are groups which have a mix of classes that do not gain any synergistic performance effects from being assigned together and/or are made up mostly of newer members or invites. Possible scores ranged from 1 (suboptimal) to 5 (optimal) and each member of the same group received the same score. Approximately 10% of the raids, randomly
selected, were first coded and the results presented to three VWT leaders to assess coding reliability. After confirming reliability, the remainder of the raids was coded and the scores derived were averaged for each individual based upon their participation over the 124 raiding events collected.

4. Results

Prior to testing the structural model, the measurement model was first assessed. Due to space limitations, this step is briefly summarized. Table 1 presents the means, standard deviations, average variance extracted (AVE), composite reliabilities (CR) and cronbach’s alpha (CA) statistics. Convergent validity was assessed by verifying that AVEs were larger than 0.50 to demonstrate that the majority of variance was accounted for by the constructs [7]. Discriminant validity was assessed by verifying that 1) the factor loading of each item on its underlying construct exceeded the generally accepted threshold of 0.60, 2) that the factor loading of each item was higher on its underlying construct than on any other construct, and 3) that the constructs shared more variance with their measures than with other constructs.

Overall, acceptable psychometric properties were demonstrated with CAs and ICs exceeding 0.70, AVEs exceeding 0.50, factor loadings on constructs exceeding 0.60 without high cross-loadings, and the square root of the AVEs being larger than any of the correlations between constructs. Table 2 presents the results from the tests of the structural model using Smart PLS 2.0 [37].

Table 1: Construct Means, SD, AVE, ICR, and CA

<table>
<thead>
<tr>
<th>Construct (Items)</th>
<th>Mean</th>
<th>SD</th>
<th>AVE</th>
<th>ICR</th>
<th>CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (1)</td>
<td>33.62</td>
<td>8.73</td>
<td>-</td>
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<tr>
<td>Guild Tenure (1)</td>
<td>29.72</td>
<td>28.36</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Hours Per Week (1)</td>
<td>27.69</td>
<td>7.14</td>
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<td>-</td>
<td>-</td>
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<td>LMX (6)</td>
<td>3.81</td>
<td>0.53</td>
<td>0.70</td>
<td>0.93</td>
<td>0.92</td>
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<tr>
<td>Emp - Competence (3)</td>
<td>4.46</td>
<td>0.58</td>
<td>0.78</td>
<td>0.91</td>
<td>0.86</td>
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<tr>
<td>Emp - Impact (3)</td>
<td>3.06</td>
<td>0.75</td>
<td>0.71</td>
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<td>0.80</td>
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<tr>
<td>Emp - Meaning (3)</td>
<td>3.93</td>
<td>0.65</td>
<td>0.82</td>
<td>0.93</td>
<td>0.89</td>
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<tr>
<td>Emp - Self Determination</td>
<td>4.09</td>
<td>0.65</td>
<td>0.76</td>
<td>0.91</td>
<td>0.84</td>
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<tr>
<td>Group Assignment (1)</td>
<td>4.27</td>
<td>0.47</td>
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<td>-</td>
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<tr>
<td>Trust - Benevolence (3)</td>
<td>4.15</td>
<td>0.55</td>
<td>0.62</td>
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<td>Trust - Competence (3)</td>
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<td>0.59</td>
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<td>Obligation (3)</td>
<td>4.10</td>
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<td>0.80</td>
<td>0.92</td>
<td>0.88</td>
</tr>
<tr>
<td>Norms (3)</td>
<td>4.19</td>
<td>0.57</td>
<td>0.95</td>
<td>0.98</td>
<td>0.97</td>
</tr>
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</table>

Table 2: Results of Structural Model Testing

<table>
<thead>
<tr>
<th>Path</th>
<th>β</th>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age -&gt; Performance</td>
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<td>Control</td>
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<td>Guild Tenure -&gt; Performance</td>
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<tr>
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<td>LMX -&gt; Group_Assignment</td>
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<td>0.198</td>
<td>H3 Partially</td>
</tr>
<tr>
<td>LMX -&gt; Trust_C</td>
<td>0.017</td>
<td>H3 Partially</td>
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<td>LMX -&gt; Norms</td>
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<td>LMX -&gt; Org_ID</td>
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<tr>
<td>Emp_Comparentence</td>
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<td>Trust_C -&gt; Performance</td>
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<td>H9 Partially</td>
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<td>Obligation -&gt; Performance</td>
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<tr>
<td>Org_ID -&gt; Performance</td>
<td>0.205</td>
<td>H12 Supported</td>
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5. Discussion

Overall, support was generally strong for the hypotheses predicting that the quality of the leader-member relationship would positively influence the allocation and development of resources (Hypotheses 1 – 6). Higher quality leader-member relationships significantly influenced all of the allocation of resource components (H1 & H2) and nearly all of the relational capital constructs (H3 - H6). However, hypothesis 3 was only partially supported, as the leader-member
relationship did not significantly influence competence-based guild trust. For the hypothesized paths between resources and member performance, there was partial support. Hypotheses 7 and 8, which predicted that higher levels of member empowerment and better group assignments would lead to higher levels of member performance, were partially supported. The remaining hypotheses (9 – 12) predicted that members who developed higher levels of relational capital (trust, obligation, norms, and identification) would perform better. Hypothesis 9 was partially supported and hypotheses 10 and 12 were fully supported. Contrary to expectations, hypothesis 11 was not supported. Given that our items measured only the awareness of VWT norms, this suggests theoretically that awareness of norms alone may not predict performance and that the extent to which individuals adhere to positive norms or standard operating procedures could be an influential predictor of performance.

Notably, the leader-member relationship significantly influenced nearly all of the mediating variables for this study. However, not all of the resource variables significantly influenced member performance. Furthermore, a test of mediation (omitted due to page limitations) suggests that the leader-member relationship does not have a direct impact on member performance, rather the leader-member relationship influences the level of member resources, and it is these resources that impact member performance.

5.1. Theoretical and practical implications

These findings suggest three key implications. First, coach up the members of your VWT and get out of the way. The results of this study suggest that the leader-member relationship has an impact on the degree to which employees feel empowered to perform their roles. Two dimensions of empowerment are of particular interest as they have a direct impact on performance: 1) self-competence and 2) self-determination. Leaders should therefore focus on activities which elevate members’ perceptions of competence (e.g. coaching or positive feedback), as well as avoid micro-management. When members are confident in their abilities and have the latitude to perform their roles as they choose, this “can-do” attitude can improve their performance.

Second, tangible resources matter. Consistent with LMX theory, this study found that stronger leader-member relationships were positively related to the degree to which members were assigned better resources, in terms of group assignments. Better group assignments allowed members to take advantage of the complementary skill sets between members with different job roles. The synergistic effects derived from group diversity in turn improved the performance of members who participated more often in better groups.

Third, set your members free but bind them to each other. As the literature suggests, managing large numbers of collocated avatars in a virtual world environment can be difficult due to the disruptive effects of geographical, temporal, cultural, and technology-mediated discontinuities. Based upon the results of this study, one way to lead in environments where formal control is limited is for leaders to encourage the development of relational capital among VWT members. This is because with stronger leader-member relationships, comes a transformation of members’ self-interest to a collective interest. Members are bound together tightly by durable obligations, identification with the VWT, and trust in the benevolence of team members.

When members of the VWT were asked why they continued to volunteer their time and efforts to participate on raids, a very common response was “it’s about the other people.” Building on these findings, a key way that leaders can make an impact on VWTs is to focus on building a strong esprit de corps in which individual members maintain positive beliefs about the larger collective. When members buy into a collective interest, the governance of VWT activities can shift from formal leader-member relationships to the enactment of or adherence to the individually-held beliefs of members. Members regulate their performance based upon the extent to which they share relational capital with the team and do not necessarily perform solely at the behest of their leaders. Given the difficulties introduced by the communications media for most CMC-enabled teams, understanding these facets of relational capital offers one possible solution for understanding how to effectively manage VWTs.

5.2. Limitations

With any research, the study’s findings should be considered in light of its limitations. For this study, there are two main limitations: the small sample size, and the generalizability of the findings. Given the sample size guidelines for PLS analysis suggested by Chin and Newsted [7], this smaller sample size impacted the extent to which complex path models could be tested. Hypothesis testing was conducted using three models which varied in complexity. The results from the full research model were consistent with earlier results from the less complex models tested, indicating the stability of the results. However, the possibility that there was insufficient statistical
power to detect small effect sizes which could increase the probability of Type II errors remains.

The second limitation deals with the generalizability of the findings from the study. As data collection was limited to one VWT, it is difficult to conclude how generalizable the findings are to other VWTs or virtual teams which use different communications media. However, the VWT sampled bears similarity to other VWTs within the Everquest context. For example, the demographics of the respondents are consistent with what other studies have noted [6, 49]. Also, the ways VWT operate and are managed and controlled tend to be very isomorphic in nature, copying best practices observed in other leading VWTs [47]. For example, the use of a “points” system to measure and to reward participation is the norm among large, raiding-oriented VWTs. Without surveying multiple VWTs however, it is difficult to definitively suggest how generalizable the results are to VWTs that do not share these characteristics.

6. Conclusion

The purpose of this study was to examine how the leader-member relationship influences member performance. Building upon LMX theory, this study proposed that higher quality leader-member relationships would have a direct impact on the degree to which members are allocated and develop resources. Higher levels of resources enable members to perform better than their peers. Evidence from a study of 61 members of a VWT generally suggests the leader-member relationship does impact members’ allocation and development of resources. Furthermore, the findings from this study suggest that it is the quantity and the type of resources that impacts performance, not the leader-member relationship.

This research makes important contributions to understanding LMX theory as well as how to influence member performance. From a theoretical standpoint, the goal for this study was to open the “black box” of LMX theory and to explore more precise causal mechanisms by which leader-member relationships impact performance. Consistent with LMX theory, the findings suggest that the leader-member relationship is important, having a positive influence on nearly all the resource variables. However, further examination helps tease out which resources are influential on member performance. In particular, two dimensions of empowerment, access to better work assignments, benevolence-based trust, obligation, and identification influenced member performance.

From a practical standpoint, this research provides guidance into what leaders may do to effectively management VWTs. For example, better member performance could be achieved through coaching and avoiding micro-management, providing members with better team assignments or resources, and binding VWT members to each other such that collective interest replaces self-interest. Ultimately, by studying VWTs that have succeeded, as they commonly do in online gaming environments where participants are volunteers, it is our hope that this research will help leaders in real life organizations manage virtual world teams that to date have been perceived as unmanageable.

7. References


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