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In-Depth Look at Tuckman's Ladder and Subsequent Works as a Tool for Managing a Project Team

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Abstract

Bruce Tuckman's 1965 research on modeling group development, titled "Developmental Sequence in Small Groups," laid out a framework consisting of four stages a group will transition between while members interact with each other: forming, storming, norming, and performing. This paper will describe in detail the original Tuckman model as well as derivative research in group development models. Traditional and virtual team environments will both be addressed to assist IT project managers in understanding how a team evolves over time with a goal of achieving a successful project outcome.

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1. Introduction

In the Project Management Institute's (2013) Guide to the Project Management Body of Knowledge (PMBOK Guide) under the Project Human Resource Management chapter, is the section titled, "Develop Project Team: Tools and Techniques." Under this project management activity, specifically in section 9.3.2.3 of the PMBOK Guide, titled "Team-Building Activities," is the reference to Bruce Tuckman's seminal 1965 work known as the "Tuckman Ladder" (Project Management Institute, 2013). This ladder has become a tool to assist project managers in ensuring project success by understanding the different stages through which a group develops through over time.

Tuckman's simple model of group development has flourished into an influential model. According to Google Scholar (2016), this model has been cited 5980 times. There has been over 50 years' worth of subsequent empirical studies, model modification, model extension, and alternative models developed based upon Tuckman's original work. This paper will begin by delving into the 1965 work, how the model was created, and its subsequent revision in 1977. Next, some of the challenges with trying to fit a simple model on a complex issue such as group development will be detailed. Then, some alternative models will be shown and more recent work in group development will be explored. Finally, a discussion of how the Tuckman model fits into virtual teams will be discussed to demonstrate the model's applicability to current management techniques in the modern workplace.

2. Tuckman's Ladder

Bruce Tuckman's first professional job after graduate school was working for the Naval Medical Research Institute in Bethesda, Maryland researching small group and organizational behavior (Bonebright, 2010). Tuckman was asked, by his supervisor at that time, to review the large collection of group development articles (Bonebright, 2010, p. 113). In reviewing those 50 articles, Tuckman was able to group them into four settings (Tuckman, 1965, p. 384). The first setting Tuckman (1965) found was *group-therapy* in which the individuals were working to handle personal issues. Tuckman (1965) said the second setting was a human relation *training group*, or *T-group*, in which the goal was to assist individuals to work more productively

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together. The third setting Tuckman (1965) found was termed *natural-group* which encompassed professional-based or social-based groups whose intent was to perform a job rather than for an individual to achieve self-improvement. The fourth and final setting Tuckman (1965) found was the *laboratory-task* group whose sole purpose was to study group interactions.

Tuckman also drew attention to two realms found in the articles: "*interpersonal* stages of group development and *task* behaviors exhibited in the group" (Tuckman, 1965, p. 385). This distinction was important because the studies he researched showed the two realms would often be intermixed causing confusion when comparing researchers' findings. Throughout researching Tuckman's model and subsequent works, many instances where found in which terminology varied between studies with those discrepancies continuing to exist to this day.

Tuckman's model began with the first stage of group structure being that of "Testing and Dependence" (Tuckman, 1965, p. 387). In the interpersonal realm of that group structure was the discovery of acceptable behavior among team members. The task-activity realm of this group structure was "*orientation to the task*, in which group members attempt to identify the task in terms of its relevant parameters and the manner in which group experience will be used to accomplish the task" (Tuckman, 1965, p. 386). Simply put, the group understood acceptable behaviors amongst team members to achieve the task at hand.

The second group structure stage was "Intragroup Conflict" (Tuckman, 1965, p. 388). The interpersonal realm in this group structure was found when group members expressed their individuality, it, in turn, brought about group in-fighting and fear of the unknown. The task-activity realm of this group structure, "Emotional Response to Task Demands," was seen with group members' emotional responses to the assigned task (Tuckman, 1965, p. 389).

The third group structure stage was "Development of Group Cohesion" (Tuckman, 1965, p. 389). The interpersonal realm in this group structure saw group members accepting each other's personalities and how to work more effectively together. The task-activity realm, "Discussing Oneself and Other Group Members," saw the group openly sharing interpretations of the task at hand with the outcome being a unified movement toward achieving the assigned task (Tuckman, 1965, p. 390).

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The fourth group structure stage was "Functional Role-relatedness" (Tuckman, 1965, p.390). The interpersonal realm of that stage saw individuals finding their role within the group. In the task-activity realm, "Emergence of Insight," the group identified and worked toward successful completion of the task (Tuckman, 1965, p. 390).

After having identified the stages, Tuckman isolated the overarching concepts to produce the common stages we know today: forming, storming, norming and performing (See figure 1).

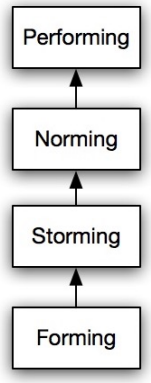

Figure 1. Tuckman 1965 Model

3. Adjourning Added

In 1977, Tuckman and Jensen revisited the 1965 Tuckman model to address any new research made in those intervening twelve years. They concluded, "The bulk of the literature from 1965 to the present has been theoretical in nature" (Tuckman & Jensen, 1977, p. 425). The 1971 Runkel et al. empirical study specifically set out to test the Tuckman model. In that study, the observers were given the four Tuckman stages beforehand and were told to observe groups of students until a behavior fit within those four stages. At the conclusion of the study the observers determined they had proven Tuckman's model. Tuckman and Jensen did note that many other authors "offered their own models of group development, however similar to models already described" in Tuckman's literature (1977, p.425). However, Tuckman and Jensen did find that Braaten's 1975 composite model included a termination stage. This termination stage along with other life cycle studies they cited led Tuckman and Jensen to revise Tuckman's original model to include an "adjourning" stage (See Figure 2) (Tuckman & Jensen, 1977, p. 426).

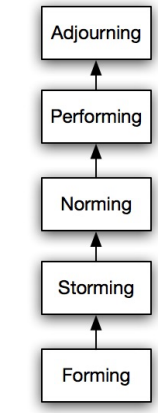

Figure 2. The Five Stages

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4. Challenges in Testing Tuckman's Model

Tuckman developed his first model in 1965. At that time, even he said that "this literature cannot be considered truly representative of small-group development processes…rather, it must serve as a stimulus for further research" (Tuckman, 1965, p. 395). In this case, he was referring specifically to the majority of studies pertaining to being in therapy group settings and how many were not found in real world or laboratory settings. He was also critical of the experimental rigor applied to the tests, citing that the observations are more qualitative than quantitative. Tuckman, in 1977, again voiced concern that much of the literature on this subject lacked empirical studies and "that most authors, although writing from a theoretical framework, call for further research to verify their hypotheses" (Tuckman & Jensen, 1977, p. 426). Weingart, as recently as 2015, continued to point out that not enough studies have focused on group development processes.

Another issue identified in 2001 by Offermann & Spiros was the lack of definition of the words *team* and *group* in the studies they were researching. Their concern was:

> This is a substantial problem for knowledge transfer in that, without clarifying the nature of group interdependence, it becomes difficult to generalize findings across settings and to have confidence in the application of research. Diversity in terminology can be a source of both conceptual and practical confusion that makes it difficult for practitioners to identify research relevant to their particular concerns. (p. 377).

5. Runkel's Empirical Tests of the Tuckman Model

Runkel et al.'s 1971 paper, "Stages of Group Development: An Empirical Test of Tuckman's Hypothesis," described a methodology to test Tuckman's model. That particular methodology was a 1968 college semester psychology course whose students were chosen as blind study participants. Three large groups, consisting of 15 to 20 students each met several times a week. Each larger group was then broken into smaller groups with a minimum of four individuals each. Each smaller group, after forming a workgroup, "was to decide upon a project, collect and interpret data, and write a final report" (Runkel et al., 1971, p. 182). At meetings of the larger or smaller workgroups, two observers were present to record "both the verbal

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discussions and the behavior of the group members" by a prescribed method (Runkel et al., 1971, p. 183). The method essentially had the observers watch the group and when a behavior fitting one of Tuckman's four stages occurred they took note of the situation and categorized the behavior according to its appropriate stage.

After analysis, Runkel et al. found that all three large groups progressed through the stages, reverted to a lower stage, then continue upward progression through successive stages thus supporting Tuckman's model. Runkel et al. concluded that they had performed three separate tests, each large group being a separate test, and that all three tests supported Tuckman's model.

6. Heinen and Jacobson

Heinen and Jacobson, in studying industrial task groups, grouped "the relationships among the [group development] models in terms of the similarity of events described at different developmental stages" (1976, p. 101). By comparing each model which included Tuckman's model at the different stages, one conclusion they came to is that the period between the stages is arbitrary and "can be consummated within a relatively short time or over a long period; interrupted and resumed; or reversed and reinstituted" (Heinen & Jacobson, 1976, p.108). This means that the group's development is not going to be smooth and linear, rather there will be a cyclical motion from one stage to the next stage as the dynamics of the group change.

7. Rickards and Moger's Alternative Model

In 2000 Rickards and Moger focused their research on a new type of group model called project teams. Project teams typically have a short lifecycle, come together to achieve a single project, and are usually comprised of members from other groups. The group development community still considered most research done on project teams as theoretical in nature in the early 2000s: "Our own inspection of contemporary texts of project team dynamics revealed a general reluctance to incorporate such models from literature of team development, with the exception of the Tuckman and Jensen model" (Rickards & Moger, 2000, p. 281).

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What Rickards and Moger (2000) proposed as a modification to the Tuckman and Jensen model was a "weak behavioral barrier" (See Figure 3) after the forming and storming stages. The weak barrier represented intrapersonal and interpersonal forces that must be overcome before moving into the norming stage. The weakness property was only present because the barrier was temporary and was usually overcome by the team. An example of a team passing through the weak barrier is a team that produces deliverables or meets project objectives. The Rickards & Moger (2000) model also had a strong barrier after the norming and performing stages and before the outperforming processes phase. This strong barrier meant that fewer teams would pass through it to become an outperforming team. Such an outperforming team needed to work exceptionally well together and have high levels of productivity.

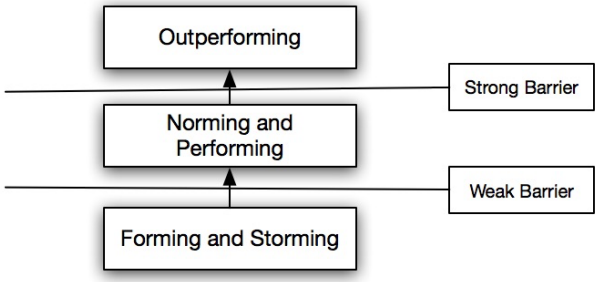

Figure 3. Weak and Strong Barriers

Rickards and Moger (2000) performed two empirical studies, one on business graduate students and the other on multiple teams within a multinational industrial organization. The first study identified teams who did not make it through the weak barrier, on the order of "0-15%" (Rickards & Moger, 2000, p. 278). Their study estimated that the same number of teams probably made it through the strong barrier. The second study showed again that small numbers of teams did not make it through the weak barrier and about the same, one team out of 30, or 3%, made it through the strong barrier, thus supporting their model (Rickards & Moger, 2000, p. 278).

8. Non-linear Group Development Literature

Up to this point, this paper has focused on Tuckman's model along with some variant models introduced. All the previous models have been linearly based, e.g. progressing from one stage to the next without repetition or reverting to a previous stage. A different approach will be

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looked at in non-linear models. For example, "Smith (2001) categorized group development into linear-progressive, cyclical-pendular, and nonphasic-hybrid models" (Funk & Kulik, 2012, p. 41). Funk & Kulik (2012) found a majority of popular management books contained only the linear-progressive models such as the one proposed by Tuckman. Opposing linear-progressive is cyclical-pendular in that a group may return many times over to the various stages in the model as the group's membership, task assignment, or environmental factors which may affect the group. The nonphasic-hybrid models are another variant in which group members solve problems independently or when a single or multiple stages are revisited multiple times based on environmental influences, hence their hybrid nature.

9. Virtual Teams

With advances in information technology, geographically diverse teams, as opposed to traditional teams, are becoming more of a viable team model in the 21st century. Virtual teams introduce unique challenges to teams or project managers in terms of group development that are not prevalent in traditional office environments.

Several researcher groups have studied virtual team development using the Tuckman model with the forming stage being considered the most important to virtual team success. Furst et al. found that face-to-face meetings early in the forming stage helped team members develop a sense of trust "based on social and emotional attachments" (2004, p. 8). Allowing team members to gain insights into each other through verbal and nonverbal cues, as well as allowing the members to develop a bond, benefits the team in the later stages of group development (Lee-Kelley, Crossman, and Cannings, 2004). Lee-Kelley, Crossman, and Cannings (2004) found that the frequency and number of face-to-face meetings were critical to the success of the project and that such meetings assisted in the storming and norming stages as group norms were established early on. Project managers in the first stage can additionally assist the virtual team by ensuring that the team's task or project is clearly and concisely defined (Lee-Kelley, Crossman, & Cannings, 2004). Otherwise, teams may not ever make it out of the storming phase due to poorly defined project requirements.

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Researchers differ on whether a team passes through a storming phase. Berry showed that the stage may be completely ignored or melded into forming and norming because "virtual teams have more of a task than personality focus" (2011, p. 6). Furst et al. (2004) found that the storming stage demonstrated by team members identifies the low contributors and can also provide a general sense of group disarray. To reestablish team cohesion their suggestion is to have early management intervention when witnessing team conflict as well as appointing a group leader with intrapersonal skills versus the common group practice of electing a leader based upon technical skills.

Furst et al. point out that the norming stage is the time when a "team assess whether their work processes have been effective or if they need to be revised" (2004, p. 9). The team will ensure that their communications methods are productive, that members are fulfilling their assignments, and that generally, interpersonal relationships are seen as further strengthened. The performing stage sees the team working together to maintain performance. Furst et al. found that at this stage members "can face competing pressures from local assignments, frustrations over free-riding teammates, and communication problems associated with asynchronous communication" (pg. 10).

10. Proposed Reading List

An individual new to project management, or a seasoned veteran looking to update their knowledgebase, will find the following recommendations valuable for expanding their knowledgebase. Offermann and Spiros (2001) found the following resources, in order of popularity, were the most referenced by academic and full-time practitioners: Organizational Dynamics, Academy of Management Journal, Executive, Academy of Management Review, and the Harvard Business Review. Berry's 2001 paper on virtual teams titled "Enhancing Effectiveness on Virtual Teams: Understanding Why Traditional Teams Are Insufficient" provided an overview, along with recommended solutions, to solving virtual team challenges. Lastly the Lee-Kelley, Crossman, and Cannings, 2004 work gave many insights into virtual team's need for face-to-face meetings as well as other social interaction insights.

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11. Conclusion

This paper presents group development from an academic perspective beginning with Bruce Tuckman's 1965 model: forming, storming, norming, and performing. Following the introduction highlights of empirical studies showing the viability of Tuckman's model were explained. Subsequently derivative works of Tuckman's model, as well as wholly alternative models, were overviewed. The vast amount of literature researched for this paper show that there is not a singular group development model that will embody the vast diversity of team development possibilities across the different environments in existence. Rather a project manager must tap into various group development models to find the one that fits.

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