

# The Relationships Between Personality Types and Project Management Team Satisfaction

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This research studies the relationships between personality types in Project Managers and Project Engineers and how they relate to project team satisfaction. Goals this research set out to accomplish include: finding relationships between personality types and team satisfaction, determining if heterogeneous or homogeneous team compositions yield greater levels of satisfaction, and determining if certain personality types influence team satisfaction more than others. In order to answer these goals, a specific study was conducted comparing two project teams composed of PMs and PEs. These teams were instructed to complete the NERIS Type Explorer® along with a Likert Scale questionnaire to self-assess their level of satisfaction with their respective team. In addition, participants were instructed to elaborate after answering each question to further explain their reasoning for each rating. After comparing the results of the NERIS Type Explorer® to the questionnaire, both project teams displayed similar levels of satisfaction while exhibiting different personality types and compositions. This result yielded no significant correlation between personality type preferences and team satisfaction. Though small, a relationship was discovered with the Mind personality facet where team A displayed higher levels of the extraverted preference along with higher levels of satisfaction with regards to communication and cooperation.

**Key Words:** Personality Types, NERIS®, Project Management, Teams, Relationship

## Introduction

Over the 20<sup>th</sup> and 21<sup>st</sup> centuries, military and industry leaders have pushed for the implementation of personality assessments to determine mental stability whether it's in combat or in the workplace (Gibby & Zickar, 2008). Even though personality tests, like the MBTI for example, are met with speculations and criticisms, some have the ability to make simple predictions (Boyle, 1995) about a person's level of job satisfaction. The study of the relationships between personality types and job satisfaction have been completed in the computer programming (Furnham & Zacherl, 1986) and manufacturing industries (Kuipers, Higgs, Tolkacheva, & de Witte, 2009) but yielded slim results when it came to correlations. While there is research in other industries on this topic, there is little to no research on how personality types affect the satisfaction of a construction project team.

## *Research Goals*

The purpose of this research paper is to study the relationship between individual personality types and project team satisfaction with regards to the project management team on a construction project. Specifically, this paper contains a study comparing two project management teams based out of two different construction projects. The goal of the comparison is to see the similarities and differences between personality composition of project managers and project engineers and how those project team personality compositions effect their job satisfaction at both an individual and team level. The goals this research look to accomplish include:

- Is there any relationship between personality types and project team satisfaction?
- Do homogeneous or heterogeneous teams experience more satisfaction?
- Which personality type correlates most to satisfaction within the project team?
- Which personality type correlates least to satisfaction within the project team?

The inspiration for this research paper came from general interest in how individual personality types of a project management team can affect the job satisfaction within the team itself. Through brief experiences working around and with different project teams over the past few years, it is essential that the project management team is working compatibly with one another as they are responsible for working directly with subcontractors, city inspectors, the design team, and the owner. If the project management team is unable to work together in a satisfactory manner, then the project suffers as a whole. A successful project team is paramount in a successful construction project that needs to meet and exceed high expectations set by its owners and design team. It is important to note that not all of project satisfaction lies solely on the project managers and project engineers, as there are other variables that can affect job satisfaction. For the purposes of this paper, however, only the composition of project managers and project engineers will be compared to see if different personality preferences yield different levels of team satisfaction.

## **Literature Review**

The purpose of this literature review is to learn about the history and evolution of personality testing and the limitations that come along with it. This literature review also looks at new developing research on the NERIS Type Explorer®, as well as previous research studies on personality testing and its relation to job satisfaction in various industries.

### *History and Types of Personality Testing*

The history of personality testing can be dated back to the early 20<sup>th</sup> century with the creation of the Woodsworth Personal Data Sheet which was used on prospective soldiers during World War I (Gibby & Zickar, 2008). This test was used to evaluate a soldier's ability to perform in the high-pressure situations of battle without breaking down mentally. According to Gibby and Zickar (2008), the WPDS was eventually discredited, but its inception laid the groundwork for future personality tests within various professions. What made this type of personality test so appealing to upper management in various industries at the time was because the test was said to determine if prospective employees would be a bad hire for the job at hand. After the updated WPDS was released in 1924, there were various personality tests released shortly after that were adapted more to the workplace rather than the

battlefield. Some of the more notable tests according to Gibby and Zickar (2008) that developed shortly after the WPDS were the Bernreuter Personality Index (1931) and the Humm-Wadsworth Temperament Scale (1934) due to the fact that they added a larger depth of information than what the WPDS originally offered. In the case of the BPI, it received a negative response as it was unable to accurately predict performance in the workplace. Studies were completed by Dodge in 1938, Harrell in 1940, Otis in 1941, and Hampton in 1941 in various industries and found similar negative results (cited by Gibby & Zickar, 2008). Unlike the BPI, the HWTS received much more positive results, as it was tailor made for the working industry. In fact, according to Saunders (1991), Humm and Wadsworth's test eventually led to Isabel Briggs creating the MBTI (cited by Gibby & Zickar, 2008).

As years went on, the interest in creating personality indexes or inventories that could properly assess a prospective employee's mental stability along with project their work performance increased. Some of these tests include the Minnesota Multiphasic Personality Inventory (MMPI) the Sixteen Personality Factor Questionnaire (16PF) and the Myers-Brigg Type Indicator (MBTI) (Gibby & Zickar, 2008). Though each of these tests became popular in various industries, the test that became most widely used was the MBTI. The reason the MBTI and its variants have become and continue to be so popular in industry as well as in education is because of its simplicity and straightforward results (Boyle, 1995). After completing the MBTI, it provides the subject with one of a possible sixteen personality type combinations. The possible classifications include "extraverted (E) or introverted (I), sensing (S) or intuitive (N), thinking (T) or feeling (F), and judging (J) or perceiving (P)" (Boyle, 1995).

Though the MBTI and tests of similar nature continue to be used in industry, there are legitimate concerns regarding the limitations included with the MBTI. Gregory Boyle at Bond University (1995) researched the validity of the use of the MBTI and concluded that the MBTI is subject to misuse in certain cases. One of the limitations to the MBTI and other personality assessments of similar nature is that the results are dichotomous (Boyle, 1995), meaning a person can only be categorized with the extraverted or introverted type indicator, even though there are instances where a person can express preferences for both types which makes analyzing someone's result difficult. Another limitation to tests like the MBTI involve how people respond to the test questions. Boyle concludes that people who take these personality assessments are subject to answering the questions in an untruthful manner or try to retake the test to achieve a certain personality type combination (Boyle, 1995). Boyle makes it clear that the MBTI is a useful tool that can be used in certain situations when a simple description is needed to make predictions, but the MBTI has too many limitations for it to be used in situations like evaluating employees for job hiring. Furthermore, research was completed by Frederick Morgeson at Michigan State University, concluding that faking on the personality test may not necessarily be an issue. However, personality tests in general tend to be inflated by researchers who are proponents of personality testing in the workplace. (Morgeson, et al, 2007).

### *The NERIS Type Explorer®*

While there are clear limitations to what the MBTI can offer, there is a new development of research done on a similar type of personality assessment called the NERIS Type Explorer®. The NERIS Type Explorer is a tool used in a similar fashion as the MBTI (using the four-letter categorization) while also adding a fifth letter to show how individuals respond to stress around them (Makwana & Dave, 2020). The test itself is sixty statements in length in which the participant answers each statement on a preference scale ranging from strongly agree to strongly disagree. There are sixteen possible

personality combinations for test results, which are broadly broken up into four categories of Analysts, Sentinels, Diplomats, and Explorers (Makwana & Dave, 2020). The following figure from Kirti Makwana and Govind B Dave displays brief definitions of the five personality facets involved with the test (Mind, Energy, Nature, Tactics, Identity):

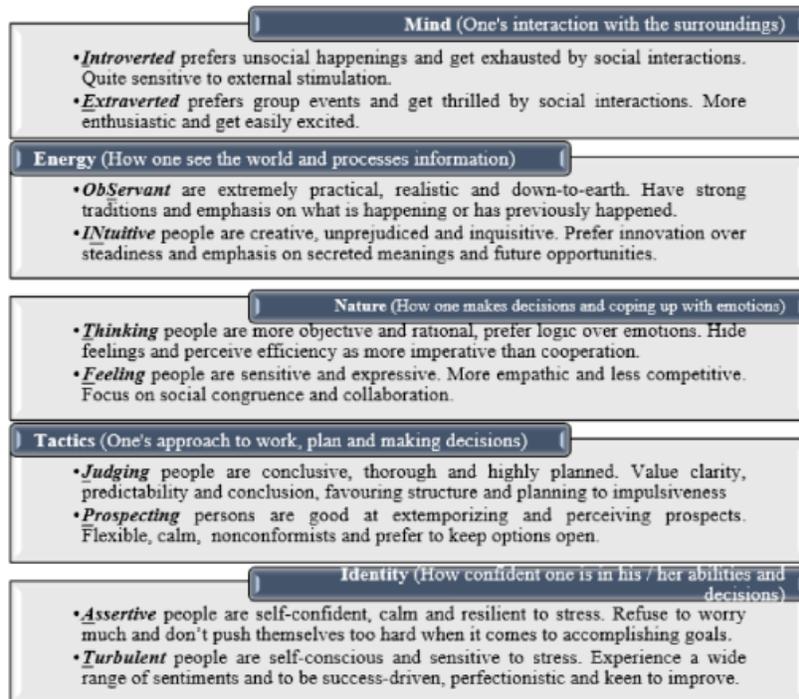


Figure 1: “Five Personality Facets of The NERIS Type Explorer® Scale” (Makwana & Dave, 2020)

In their research of reliability and validity of the NERIS Type Explorer®, Makwana and Dave define reliability as “accurateness, consistency, and stability of scores attained on a measurement tool” (Makwana & Dave, 2020). In order to achieve their goals, they used statistical tools like Cronbach’s alpha to determine reliability along with Confirmatory Factor Analysis to validate the use of the NERIS Type Explorer® as a tool to measure personality types of various individuals (Makwana & Dave, 2020).

What makes the NERIS Type Explorer® such an interesting tool is that it measures a person’s reaction to stress. In the construction industry, there is a need to meet the demands of the owner and their team which includes tight schedules and budgets while still maintaining a high quality of work. A study was completed on Project Managers in China and found being involved with multiple roles on a project led to increased stress levels in project managers (Wu, Hu, & Zheng, 2019). Since general contractors and project managers specifically are involved with all facets of the construction of a building, the stresses of completion are inevitable, so it is useful to have a tool like the NERIS Type Explorer® to see how project teams respond to stress in the workplace.

## *Previous Studies and Examinations*

Over recent history, there have been studies completed using certain personality tests like the MBTI to try to find relationships between an individual's personality type and their satisfaction within their respective line of work. In 1985, Adrian Furnham and Marion Zacherl studied the relationship between certain personality types and job satisfaction with computer programmers and analysts. Though the results were slim in determining definitively if personality types influence job satisfaction, their results still relay the influence personality can have on someone's satisfaction (Furnham & Zacherl, 1986). In 2009, a study was completed by Cheng-Liang Yang and Mark Hwang to find relationships between personality type, job performance, and job satisfaction in the Chinese workforce, finding that extraversion was the most influential personality type in predicting performance or satisfaction (Yang & Hwang, 2014). Another study was completed in 2009 by Ben Kuipers, Malcolm Higgs, Natalia Tolkacheva, and Marco de Witte who studied the MBTI and how certain personality types can affect team development in the manufacturing industry. While they found that MBTI was not sufficient in predicting team development, it was sufficient in personal development and team composition (Kuipers, Higgs, Tolkacheva, & de Witte, 2009).

Overall, the past research on the topic of comparing results to personality tests and their relations to a person's job satisfaction are slim. While there is research to be found within different industries, there is a lack of research on the relationship between personality and project management team satisfaction within the construction industry. However, the literature above provides some validation of the NERIS Type Explorer® as well as grounds to assist in answering the questions laid out in the research goals section of this paper.

## **Methodology**

As stated previously in the research goals section, the purpose of this paper is to make a comparison of two Project Management teams composed of project managers and project engineers in order to see if personality types have an affect on the job satisfaction of a project team. Specifically, the goals of this study include:

- Is there any relationship between personality types and project team satisfaction?
- Do homogeneous or heterogeneous teams experience more satisfaction?
- Which personality type correlates most to satisfaction within the project team?
- Which personality type correlates least to satisfaction within the project team?

This specific study is taking a look at two project teams from two different project locations. These project teams are both affiliated with the same General Contractor. Specifically, the subjects of this comparison study are the project managers and project engineers on the project teams. Both of the project teams are working on projects that fall under the commercial construction category. The project managers and project engineers were first tasked with taking the NERIS Type Explorer®. The results provided after completing the assessment yield a five-letter identification along with the percentage preference levels of each facet (see Figure 1 for reference). The percentages show where each individual fell on the preference range for each personality facet. In addition, the percentages were used to obtain an average personality type for the two project teams. After the participants completed the NERIS Type Explorer®, the project managers and project engineers completed a

questionnaire that is Likert Scale in style. This questionnaire contains questions and statements to rate their satisfaction in team communication, cooperation, energy and synchronization. A higher rating on each question or statement means the participant is more satisfied with their team while a lower score indicates lower satisfaction. Not only were the participants tasked with filling out the numerical portion (1-5 scale), the project managers and engineers were also asked to provide written explanations for their answers to apply more information in order to see if any relationships can be seen between personality styles and team satisfaction. The results of this study were then analyzed using percentages and averages along with using the qualitative responses from the questionnaire to further investigate if and what relationships exist between these peoples' personality style and how it affects satisfaction in the workplace of project management.

## Results and Analysis

After gathering the NERIS Type Explorer® results from each project manager and project engineer, the scores were averaged to find the overall five letter combination for each of the two project teams:

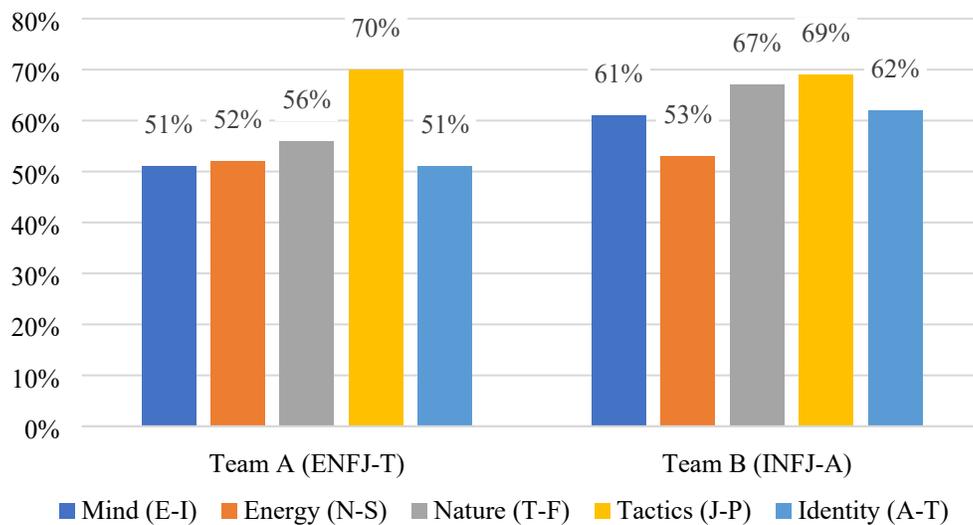


Figure 2: Comparison of Project Teams' Personality Composition

As displayed in Figure 2, Project Team A's (Protagonists) dominant traits were 51% Extraverted, 52% Intuitive, 56% Feeling, 70% Judging, and 51% Turbulent. According to 16Personalities, this team composition is made up of people who are mainly charismatic, reliable, and natural leaders, but tend to be too selfless and sensitive in some situations (16Personalities, n.d.). For Project Team B (Advocates), their dominant traits were 61% Introverted, 53% Intuitive, 67% Feeling, 69% Judging, and 62% Assertive. 16Personalities says that this composition of personalities yields people who are creative, principled, and insightful, but tend to be perfectionists and experience job burnout quickly

(16Personalities, n.d.). While both project teams display an overall personality composition, the way in which they scored those compositions happened differently. For example, in the case of Project Team A, their team composition is mostly heterogeneous, as team A only shared one of the five possible personality facets (Judging). The other facets of personality, however, displayed team members on opposite sides of the preference range. For example, the lead Project Manager for team A showed dominant preferences for Mind (Extravert - 67%) and Identity (Assertive - 69%) while Project Engineer for team A showed opposite dominant preferences for Mind (Introvert - 65%) and Identity (Turbulent - 58%). This trend created percentages for the team that were close to 50% range for 4/5 facets. On the other hand, Team B displayed more of a homogeneous composition, as the Project Manager and corresponding Project Engineer displayed strong preferences for both the Tactics (Judging) and Identity (Assertive) facets. Another reason why Team B displayed more homogenous results is because the Project Manager for Team B showed lack of preference for the Mind (51%) while the Project Engineer showed lack of preference for Energy (55%). Overall, Team A showed more of a heterogeneous makeup while Team B displayed a more homogeneous composition of preferences.

After completing the NERIS Type Explorer®, each Project Manager and Engineer was tasked with answering a questionnaire to measure their satisfaction with their project team. The measuring for this questionnaire was done in a Likert Scale style with questions/statements about communication, cooperation, energy, and synchronization. The scale is 1-5. If a person gave a score of 5, that meant the participant was fully satisfied with their team, while a score of 1 meant the participant was not satisfied. The averages for each question and statement were categorized into one of the four possible sub-categories and then summed to receive the overall rating for each team. The results from this exercise are displayed below:

*Table 1: Project Team Questionnaire Ratings*

|                 | Team A | x/5   | Team B | x/5   |
|-----------------|--------|-------|--------|-------|
| Communication   |        | 3.83  |        | 3.5   |
| Cooperation     |        | 3.75  |        | 3.25  |
| Energy          |        | 4     |        | 3.5   |
| Synchronization |        | 4.13  |        | 4.13  |
| Total           |        | 15.71 |        | 14.38 |

After reviewing each of the submitted questionnaires, it was found that project team A had an average total score of 15.71, which equates to approximately 3.9 out of 5 for overall satisfaction. For project team B, they had an average total score of 14.38, equating to approximately 3.6 out of 5 for overall satisfaction. Looking at these results from a broad lens, the Project Managers and Project Engineers from both teams expressed above average satisfaction with their respective project teams. With the scores resulting in nearly identical outcomes, looking at the detailed responses from each of the lead Project Managers is important to determine why the scores were given the way they were.

The lead Project Manager for Team A (referred to as PM-A) provided some great insights to why a certain score was given to each question and statement. When asked to rate and describe the office energy, PM-A rated their team at a 3. The explanation for that rating was that the project itself was “a

difficult job” which caused energy to fluctuate throughout the project duration, but “there were spurts of energy when required to keep everyone working towards the same goal.” PM-A noted that there were a few instances of communication lapses throughout the project, stating that “depending on the task, some items could have been closed out much quicker.” Even though there were instances with communication problems, PM-A was very satisfied with the team’s cooperative and complementary traits saying that when problem solving was needed, cooperation and collaboration were executed at high levels due to each team member’s “vast levels of experience within the construction industry.” Overall, PM-A felt that the project team was in sync as team members knew their roles and responsibilities and said their teamwork added “a level of motivation” to work harder for each other.

The lead Project Manager for Team B (referred to as PM-B) also provided elaboration with regards to their satisfaction for their project team. PM-B had similar opinions with regards to office energy as PM-A did. Specifically, PM-B said that “office energy could change on a whim” which was dependent on the “direction of the owner”. PM-B had a goal of creating the dynamic of being “open and up front with each other” early and often. PM-B said that if daily tasks were completed early with no outstanding tasks, then PM-B made sure the team knew it was acceptable to leave work when daily tasks were complete. This helped set the tone for Team B as the members had incentive to work efficiently during the day without sacrificing quality. PM-B also spoke to some of the team’s communication deficiencies and said that main issues were caused by how young the team is which comes with some inexperience in running meetings and understanding how to prioritize certain tasks. Even though there is a young team member, PM-B is still impressed with the team’s ability to come together if there is a problem that cannot be solved initially. While the younger team member may require more supervision by the Project Manager, the team still remains synchronized and understands roles and responsibilities.

After reviewing the results to the NERIS Type Explorer® along with the results to the subsequent questionnaire on project team satisfaction, it can be seen in this specific case that there is not a significant relationship between personality types and the satisfaction with regards to these Project Managers and Project Engineers. While both teams have some different personality preferences, each team is similarly satisfied with their job as a whole. The slight difference in satisfaction between Team A and B could be due to the slight differences in the Mind and Identity facets of the NERIS Type Explorer®, but the suspected reasoning will be further discussed below. It is no surprise that the Tactic type Judging was chosen for each team member, as people with this preference value structure, clarity, and thoroughness (*16Personalities*, n.d.); all attributes needed to manage a jobsite. It was also observed that the Project Managers provided lower ratings overall compared to the Project Engineers within the questionnaire, due to the high standards the managers have for their teams. Overall, in this specific case, while both teams exhibit some different personality preferences, they are each able to find above average amounts of satisfaction, meaning personality types did not have a significant impact on the satisfaction levels of these project teams.

## **Conclusion**

This specific study set out to compare two different Project Management Teams composed of Project Managers and Engineers to investigate if relationships between personality types and team satisfaction existed. After reviewing the results of the NERIS Type Explorer® along with the questionnaire, neither of these project teams show significant difference in team satisfaction even

though there are differences in personality makeup. While there may not be a strong relationship found between the teams' personalities and satisfaction, there is a slight relationship between the level of satisfaction versus the personality composition of a team. Team A being more of a heterogeneous composition could be the reason for more effective communication and cooperation throughout the project because each team member had different dominant preferences. The personality type that seems to have the most influence on the satisfaction rating appears to be the Mind facet (Extravert vs Introvert). The results show the more extraverted team (A) having an increased level of satisfaction when it comes to communication, cooperation, and energy because they prefer to work in that fashion. Since the construction industry revolves around the ability to work with others, it makes sense why the team with a more extraverted preference experiences greater satisfaction. For Team B, a weakness that could be experienced within their team is the inability to open up to others (*16Personalities*, n.d.) with their Introverted preference, which leads to problems with communication. Also, it is hard to determine if a personality type correlates least with team satisfaction due to how similar the levels of satisfaction were between the two teams.

### **Limitations and Other Factors**

While most of the answers to the research objectives above could be correct, there are factors that need to be mentioned that could have also affected the level of team satisfaction. First of all, the experience levels for Teams A and B are different. PM-A stated that their project team had some experience working together on previous projects, while PM-B made the note that Team B has a younger Project Engineer which leads to some inexperience in the industry. Having inexperience within the project team could lead to lower rates of communication and cooperation, as the younger Project Engineer just does not have the same industry experience as the Project Manager. Another factor involved is the phases of each project. Team A was near project completion at the time of taking the questionnaire while Team B was still in the pre-construction phase of their project. It makes sense why Team A experienced more satisfaction as they have more experience and they were nearing completion of their project, a monumental moment.

This specific case has similarities to other research done on the subject of personality and satisfaction within the workplace. It is difficult to determine if there is a significant relationship between the two as there are multiple factors that could affect satisfaction among various job settings. The research in other industries differs from this specific case as other research is more broad and general, while this study is of specific people and more qualitative. Also, with the struggle to validate any sort of personality test, it results in making comparisons difficult due to the need to rely on the accuracy of a personality test. The main issue with the NERIS Type Explorer® and others of similar nature is that the preference range is still using dichotomy (Boyle, 1995) to categorize a person's personality preferences. It is also impossible to determine if these assessments and questionnaires were filled out truthfully, because people could be stating what they *want* to be true rather than the truth itself.

### **Future Research**

There is future research necessary to alleviate some of the limitations listed above. One way that future research could be used would be to study the different levels of job satisfaction in a team over

the full duration of their project. This would help determine if satisfaction levels were influenced by the phase of the project itself. Also, future research is necessary to determine if the age of the participant affects the personality composition and overall satisfaction of a team, because there were age and experience differences within these two teams as well. Lastly, future research should be dedicated to studying the NERIS Type Explorer® in more depth. This assessment provided a lot of insights as to strengths and weaknesses of certain preferences, so it would be beneficial to see how these preferences are determined in depth and if their percentages provided are truly reliable. Overall, this study provided some new insights into the controversial topic of using personality tests as predictors of satisfaction. Though the results between these two project teams proved to show insignificant relationships between personality types and team satisfaction in a broad lens, there were some interesting discoveries with regards to how different personality preference compositions of project managers and engineers could yield different levels of satisfaction. Specifically, with how the Mind (E-I) personality facet impacted the project team's satisfaction levels the most. More research should be dedicated to this topic of personality type preferences in the construction industry so all managers can understand what their peers prefer in the workplace in order to get the highest level of output and satisfaction throughout the team as a whole.

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