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The Team Management Profile - Questionnaire

quality criteria

Summary from the TMS Research Manual (New Edition, 1999)

content

The Team Management Profile Questionnaire is a tool used for effective team development, the so-called Team Management System. It is a questionnaire that collects individual work preferences from which the inclination for certain roles in a team can be derived. With the help of this questionnaire it is possible to check the actual role assignment in a team as well as to carry out a target-performance comparison. The Team Management Profile Questionnaire thus serves as a tool for team development.

The following is a summary of the main studies carried out to verify the test quality criteria of this instrument. This working paper refers to the *Research Manual, New Edition 1999, Institute of Team Management Studies.* The expert advice was provided by Mrs. Angelika Bär.

The test construction

The test was designed according to the sequential strategy. The items were intuitively formulated on the basis of a theoretical concept and then subjected to further empirical testing. These are shown below.

Empirical validity of the concept: quality criteria

reliability

The reliability of a test, in this case the questionnaire that gives the TMS profile, describes the *degree of accuracy* with which the instrument measures, regardless of whether the questionnaire measures what it claims to measure. A test is completely reliable, for example, if it produces exactly the same result when presented twice.

An example: A person has a very high extraversion score after evaluating the Team Management Profile Questionnaire. After two weeks, the same person completes the questionnaire again and has a very high introversion score. Such a result would imply that the questionnaire

inconsistent behavior and stable properties over time. One would expect a person who fills in the questionnaire twice (or the parallel forms of a questionnaire that are comparable) to come to a similar conclusion. Then you could say that the test is reliable.

The unit of measurement used to statistically describe this reliability is usually the so-called reliability coefficient. This can vary from 0 to 1 - the higher the characteristic value, the greater the reliability, and thus, the more reliable the measuring instrument.

There are various methods for determining reliability. These are also subject to different requirements.

explanation of terms

parallel test reliability

For example, a group of people may be presented with two different forms of a test, which are strictly comparable (parallel test). If the test is reliable, it produces the same or at least a very similar result for both forms.

retest reliability

Another way of estimating reliability is to present the same test twice on the same sample of people. There must be a corresponding time interval between the two measurement dates so that memory effects can be minimized/excluded.

Internal consistency

Another way to determine the reliability of a procedure is to calculate the so-called internal consistency. This method is based on the following consideration: If a scale is reliable, then the individual items in it (in our case, the individual questions) are to some extent similar to each other. This means that if person X answers question 2 in a specific direction, then he should also answer question 4 in that direction.

Example: if a person answers a question in the sense of a high extraversion ("I like to go out"), then they should answer another question in the same sense so that the test itself remains stable/reliable. One can either split a test into two parts and check whether the parts are comparable (= split-half), or compare each item (= internal consistency).

Reliability of the Team Management Profile Questionnaire

U1: The **split-half** coefficient for the individual scales varies between 0.81 (extraversion scale) and 0.88 (practical - creative). In an intelligence test, for example, values of 0.90 and more would be required.

The second reliability estimation for the Team Management Profile questionnaire was done by **retesting.** With this method, the same questionnaire is presented twice to the group of subjects, and the correlation between the two results is determined. The time of the first and second measurement must be far enough apart to exclude memory effects that would artificially increase reliability. Coefficients of 0.80 and higher are required for retest reliability.

U2: The first investigation, in which the questionnaire of a sample was submitted twice, covered a period of 6 months. The following results were achieved:

The results of the Team Management Profile questionnaire vary between 0.67 (too low!) for the Structured Flexible Scale and 0.85 (appropriate) for the extroversion/introversion scale.

U3: The second study took 1 to 6 years before the sheet was completed the second time. This shows high stability: On average, 64% of the 100 test persons remained with the same profile. Only 9% changed two or more preferences.

According to the technical literature, a good test, which is not only used for exploration purposes, should generally have a reliability of over 0.80. The reliability of a good test should be more than 0.80. The Team Management Profile Questionnaire meets this requirement.

Particularly convincing are the results of the Australian study, which presented the Team Management Profile Questionnaire twice to the same group of people over a period of 1 to 6 years. Here high stability of the profiles was shown. However, Margerison & McCann **do not** distinguish between the one-year interval and the six-year interval. This means that the figures are calculated on average and give no indication as to whether there are differences between these intervals.

The author considers it reasonable that the reliability coefficients are not excessively high, since work preferences are not necessarily temporally stable characteristics of a person (traits), but can change. A good example is the changes of the scales introversion- extraversion in the course of life. Another good example is given by McCann in his speech at the 3rd TMS network meeting, in which he describes young employees who often start work with preferences for introversion, etc., i.e., the primary role of systematic implementers. Over time, however, the introverted approach may evolve towards extraversion, changing the leading role.

Overall, the Team Management Profile Questionnaire can be evaluated as a reliable tool. The reliability coefficients are in the middle range and are sufficient.

High reliability proves that a test measures phenomena and that the result of the test is not only based on temporal disturbances that occur more or less randomly. However, it has not yet been proven that the questionnaire also measures what is expected of it. If one wants to construct a test that measures intelligence, one has to check whether this criterion is captured or whether only test anxiety is measured. This quality criterion, which is applied to a test, is very complex to check in comparison to reliability. As with the reliability, there are also here several possibilities. There is no such thing as validity. As with reliability, there are several methods for estimating validity. In

The following chapters summarise the numerous studies carried out for the validity check.

validity

Explanation of the term

The **validity indicates** how exactly a method measures what it claims to measure. A perfectly valid test would, therefore, allow an immediate and error-free conclusion to be drawn about the degree of expression of the construct to be captured: an intelligence test, for example, which manages to measure only intelligence and not other constructs such as the ability to concentrate, fear, etc., would be perfectly valid.

Model of working functions

The first proof of the validity of the concept is provided by Margerison & McCann for the working functions model. The question that arises about the validity or validity of this model is how Margerison & McCann come up with these eight functions.

The eight functions of the work were intuitively created and then presented to managers and their advisors who felt they were appropriate. This intuitive
Strategy can, of course, always be attacked, but it is a legitimate method.

Model of Team Roles

Subsequently, the Team Management Wheel was developed. According to Margerison & McCann, this wheel is highly valid for managers and their consultants.

Explanation: The model of team roles or Team Management Wheel is a derivative of the model of work functions (see above). This theoretical derivation is based on the assumption that team roles result from the facts of the activities/work functions in the social context. The team role of the consultant results from the exercise of an advisory function, etc.

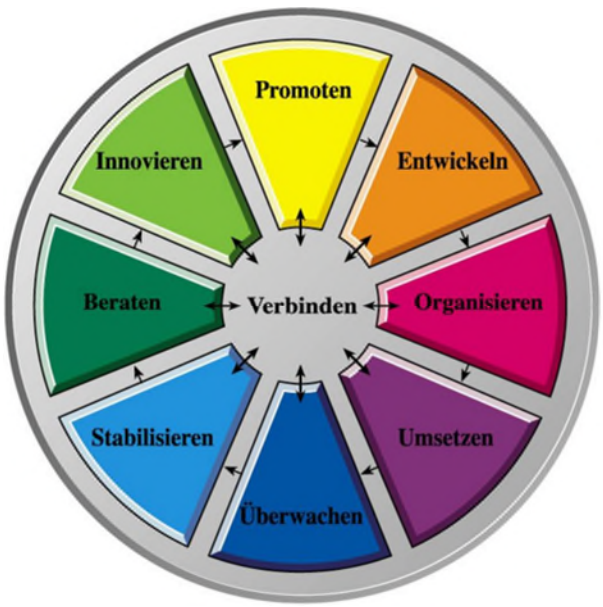
Multidimensional scaling

In order to obtain additional objective data for empirical confirmation of the model of team roles, it was tested with a so-called multidimensional scaling. For this purpose, 16 students were presented with 16 different tasks of a manager, which were to be sorted according to similarity. After these ratings have been converted into a two-dimensional map, tasks that are similar to one another are spatially closer to one another than tasks that were considered dissimilar by the students.

The resulting map showed similarity to the (also two-dimensional) model of the work function.

If you put the map on the Team Management wheel, the relationships between the team roles become more evident, according to Margerison & McCann.

For illustration, this is to be represented graphically:



The model of working functions was designed according to the intuitive strategy and is valid.

Using multidimensional analysis (similarity estimates leading to a two-dimensional map), an objective measure - in addition to visual validity - could be applied to the subsequently developed model of team roles. Negative: this study stands on weak legs! The number of people who should estimate the similarities (16 people) and the number of tasks (16 tasks) to be compared is tiny! The selection of the tasks already suggests the result with high probability.

The validity of the Team Management Profile Questionnaire

This is about checking the connection between team roles and work preferences (scales, according to Jung). For example, one tried to confirm or find out if a promoter is actually creative and extroverted, a supervisor rather introverted, etc. That means, here the four (little boys) scales have been transferred into the type wheel / brought together. This proof of validity is provided by the so-called construct validations of the Team Management Profile questionnaire.

Examples of construct validations

As already mentioned on page 4, there are different types of validity. The so-called construct validity (a particular form of the so-called criteria related validity) is of particular importance in the social sciences. This validation attempts to derive hypotheses from the target construct to be measured. The target construct to be measured could, for example, be the role of the "discovering promoter." The hypothesis that can be derived is that a discovering promoter should have specific characteristics (according to theory). If this hypothesis can be confirmed, construct validation is supported. To test this hypothesis, the results of the Team Management Profile questionnaire of 281 managers were compared with a ranking of their preferred tasks. Further investigations, which ultimately all answer the question

to determine whether the roles match the assumed properties are sketched below.

U1: Comparison of the results of the Team Management Profile Questionnaire with preferred and current work areas

281 full-time managers in Australia are expected to

1. Fill in the Team Management Profile Questionnaire.
2. Complete a questionnaire on which they should first-rate the eight work functions according to their preferences on a scale of 1-8.
3. Same task as 2, but a classification sorted by the frequency with which one is occupied with the work function on a working day.

Now it was checked whether the scales of the Team Management Profile Questionnaire manage to predict the work preference or the actual activity.

Result: The work that a person prefers, as indicated in step 2, correlates significantly with the work preferences measured by the Team Management Profile Questionnaire, mostly in the expected direction. That means, if a person filled out the Team Management Profile Questionnaire, one could predict with a very high accuracy from this result, which work this person likes doing very much, which not so much, etc.. These results all reach the statistical significance level, in some cases, they become highly significant. Concerning the above hypothesis, it could be said that the roles that arise from the Team Management Profile questionnaire at least correspond to the subjective judgment of individuals about their preferences.

On the third point, however, two scales failed to relate the person's preferences to the actual work area. There is obviously no connection between the scales Extraversion/ Introversion and Analytical/ Based on conviction to actual activity. Margerison & McCann explain this with research results from the field of occupational preference, which show that the choice of occupation does not only depend on the preferred tasks,

However, also by factors such as the labor market, economic situation, etc. This explanation also seems entirely plausible to the author. In no profession can one probably "live out" all one's preferences.

Other investigations, which are also to be evaluated as construct validations, are only briefly outlined below.

U2: Comparison of external and self-evaluation

This study also proves the validity of the Team Management Profile Questionnaire. Here one compares the assessments that a person has of himself with the results of his Team Management Profile questionnaire and with the assessments that the closest colleague of that person has.

Result: The results of the Team Management Profile Questionnaire correlate significantly with the person's self-assessment. In 50% of the cases, there was no difference at all between the result of the Team Management Profile questionnaire and the person's assessment of themselves. This means that a person would agree with the result of the Team Management Profile Questionnaire in most areas, but there are also areas where the profile provides new information (otherwise you could ask the people yourself).

There was no significant correlation between the team management profile questionnaire and the rating by the closest colleague.

This result makes sense if one assumes that the persons examined are better able to describe their preferences than their colleagues.

Worldwide data analysis as a basis for further construct validations

The Team Management Profile Questionnaire was tested on 73,698 people worldwide. This testing aimed to create a data basis. The collected data can also be interpreted as further confirmation of the validity of the Team Management Profile Questionnaire. Based on this data, standards have been developed which allow groups to compare their profiles with each other or to compare an individual profile with the average profile of a professional group. At the same time, a further

Construct validation, as the groups differ from each other in terms of their profiles. This means that one could formulate a hypothesis that a teacher has different roles and characteristics than an employee who has administrative tasks. This was confirmed in subsequent investigations.

U3: Comparison of functional areas

Here, Margerison & McCann compare employees from a range of professional functions with their specific profiles. The role preferences of nine functional areas are examined: for example, people working as Managing Directors, in Corporate Planning/Development, Human Resources/HR/Training/Recruitment, Finance/Accounting Sales/Marketing/PR, Production/Design/Control, Design/R&D, Consulting or Administration.

Interestingly, when comparing the resulting preferences across all people and activities, one can see a focus on the right part of the Team Management Wheel (especially organizing).

Although such a focus on the roles of the right part of the Team Management Wheel can be observed across all functional areas, the individual areas can still be differentiated by their Team Management profiles. For example, the focus is on production/design/control, administration, and finance functions on producing and inspecting roles. The Managing Directors sample has the highest percentage of people with preferences for development roles'. Persons from the functional areas of corporate planning/development show the highest percentage of promotion roles. The consultant sample has the highest percentage in the role preference "Creator- Innovators", persons working in the personnel/ HR/training sector are the most frequent rapporteurs and consultants.

One develops here in the sense of selecting, deciding and initiating

U4: Comparison of occupational groups

The comparison of different occupational groups is also quite informative. For example, the average profile of 243 teachers was determined, and in comparison to other occupational groups, a quite high proportion of reporter advisers was found (14% of teachers; production/project engineers, for example, only 1%).

A sample at Hewlett Packard showed an unusually high proportion of creator innovators.

These results speak for the distinctiveness of occupational groups with the Team Management Profile Questionnaire and are an excellent proof of its validity. In principle, they show that the questionnaire "works".

U5: U5: Comparison of nations

Impressive percentages can also be obtained by comparing the profiles in different nations. Sweden has 54% of profiles in Exploring, Malaysia 25% etc.

U6: U6: age groups

Differences were also discovered when comparing different age groups. Of particular interest is the extraversion/introversion scale, which tends more and more towards higher introversion values in the older age groups. However, this effect cannot be interpreted as a function of aging. There may be differences between age groups due to influences of the age in which people were socialized (so-called generational or cohort effect). The influences that could be significant in this context are, for example, changes in leadership convictions and methods.

Relationship of the Team Management System to other established procedures

Myers-Briggs Type Indicator (MBTI)

MBTI and Team Management System (TMS) have their roots in Jung's theory. The MBTI, however, has the right to change the preferences of one person in each

To capture the area of your life. Margerison & McCann quote three studies to compare the instruments, which at first glance, appear to be very similar.

The first one is explained as an example: In the Australian study, 88 people were asked to complete both questionnaires, and the relationship between the two questionnaires was calculated. This means that if a person in the Team Management Profile answers a questionnaire in the sense of high extroversion, is this also the case in the MBTI? That is, do both scales, which call themselves extraversion, measure the same?

Results: The scales have only a very weak connection. Here the same applies as already described with the reliability: The relationship is expressed in a coefficient between 0 and 1. The higher the coefficient, the more similar the scales are. The results are most similar for the E/I scales. Moreover, also there quite low (0.62) The scale Judging and Perceiving in the MBTI was almost independent of the Structured Flexible Scale of the Team Management Profile Questionnaire.

After further studies on the comparison of the two instruments, the conclusion is that the individual result in one of the two methods cannot predict the result of the other method.

Margerison & McCann interprets this result as follows: It can be seen from the figures that both instruments measure something different. The MBTI may measure preferences that apply to all areas of life, while the Team Management Profile questionnaire collects preferences related to work. In order to verify this, some people were asked about it. Especially the differences between the J-P and S-F scales were questioned. Many responded in the sense that they are more perceptive at home, while they are more structured at work.

A study in the USA, which also compares MBTI and TMS with each other, shows closer but still moderate correlations. Thus one can conclude that the two scales, despite a certain similarity, still show unexplained differences.

Belbin

The approach of the Belbin, like the theory of the Team Management System, has the basic idea of complementary role allocation in teams. Both methods are based on the assumption that different individuals have measurable preferences for working within a team. At least six of the team roles of the Belbin should theoretically be equivalent to those of the TMS.

The result of the comparison showed that the roles of the Belbin are not directly translatable into those of the TMS. This means that if someone is a chairman after the Belbin, he is not automatically a linker in the TMS. Margerison & McCann find a "central gravitation" as a result of the comparison. They describe the fact that a roll in the Belbin is located in the equal quadrant of the TMS wheel without corresponding to a single specific roll from the quadrant. There are two notable exceptions to this observation: The TMS Creator-Innovator has no equivalent to any particular role in the Belbin. For this type, there seems to be no role of its own in the Belbin.

The second exception is the Chairman of the Belbin. This one does not find Correspondence in the TMS model. One explanation for this is that the leadership role in the TMS system is not only measured via the eight roles but also in a supplemental questionnaire, the Linking Skills Profile Questionnaire. The authors of the TMS argue that leadership is an achievement in itself that each team member can take on in addition to the specific team role. Accordingly, the result of the comparison with the Belbin is entirely as expected, namely the fact that the linking leadership role is distributed among the usual roles of the Belbin, without having a direct correspondence with a role. This is an exciting finding that offers a promising topic for future research.

Overall, one has to bear in mind that the sample is quite small, and some of the roles were not filled at all. This leads to limited interpretability of this study.

The 16 Personality Factors Questionnaire (16PF)

This study establishes a connection between a general personality questionnaire and the Team Management System. The 16 PF is a questionnaire that takes on 16 dimensions of personality, which can be differently pronounced in an individual: for example, factor A describes a dimension from schizothymia (corresponds to a low score and thus the characteristics reserved, calm, critical, etc.) to cyclothymia (high score: warm-hearted, easygoing, participatory, etc.).

For each preference that the TMS produces, correlations to the 16PF have now been investigated. That is, one considered the preference of a person and at the same time, the personality profile resulting from the 16PF.

For example, the ratio of extraversion to 16 PF is as follows:

A preference for extraversion correlates significantly with the 16PF factors A (see above), E (submissiveness - dominance), and H (shy, fearful, withdrawn - adventurous, uninhibited, brash). High extraversion can be associated with emotional expression and a preference to be with other people (Factor A), a high level of dominance and independence (Factor E) and adventurousness, impulsiveness, etc. (factor H).

The scales Extraversion and Introversion, as well as the scale Practical-Creative, showed significant correlations to the 16PF. The other two scales missed the significance level (analytical, conviction, and structure, flexibility preferences). The authors rightly consider this to be disappointing. An explanation is not proposed.

The significant correlations of the other scales are nevertheless a further, important component within the framework of the construct validation of the TMS.

Not all of the numerous studies on the Team Management System in general or on the Team Management System questionnaire can be presented here. This selection is intended to provide an insight into the comprehensive research activities without claiming to be exhaustive.

Conclusion: The validity of the Team Management Profile Questionnaire is sufficiently documented. Numerous research efforts testify to the broad scientific basis of the instrument. Some open points, which were also highlighted in this summary, should be understood primarily as suggestions for further research activities.