Identifying and measuring talent

An exploratory investigation into the use of talent scans in practice

In this article, we are going to discuss the findings of an exploratory investigation into talent scans. The aim of the research was to gain more insight into the use of talent scans in practice and to make a research on a number of widely used talent scans for what they measure and how they do it. The information was collected through a practical study (interviews with HR professionals and assessment agencies) and a scan inventory (eight talent scans). The research shows that in practice talent scans are mainly used in development and mobility issues. The choice of a particular scan is mainly dictated by practical considerations. The usability in practice and the price-quality ratio are often of paramount importance, and with that, most HR professionals have little regard for the validity and reliability of the scans. Even though the HR professionals say they have a holistic view of talent, in practice only one or two talent scans are used when measuring talent. This means that talent is not fully measured. An inventory of available scans shows that while the range of scans is large, in practice only a small selection of them is frequently used. We have investigated eight of these frequently used scans further, showing that in most cases they are demonstrably valid and reliable. However, there is no unambiguity in the characteristics or talents that the scans measure and how they measure them. This makes it difficult for HR professionals to get a quick overview of the range of talent scans. They will have to (critically) study the scans they want to use in depth.

Keywords: assessment, talent, talent management, HR metrics, HR instruments

Introduction

Many organizations are struggling with the question of how to define, identify and attract talents (Deloitte, 2010; Towers Watson, 2014). Research shows that the lack of a clear and common definition of a talent plays a role in the failure of talent programs (Poocharoen & Lee, 2013, Powell et al., 2013, Mooren, 2016, Komninos, 2017). This leads to confusion who the program is meant for and what it aims to achieve. Defining and identifying talents is therefore also the starting point for a talent program or policy. This starts at organizational level with a clear definition and operationalization of talent that fits the organization, because the definition of talent is decisive for the nature of talent management interventions (Thunnissen & Gallardo-Gallardo, 2017). But the knowledge of talents is also the starting point at individual level. To be able to develop and use talents, an employee (and the organization) must first know what his or her talents are (Vos et al., 2017).

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Many organizations are therefore looking for or using talent scans to identify talent in their organization and their employees. The range of talent scans is huge. A search in Google for 'talent scans' yields no less than 1,030,000 hits. A variety of instruments, methodologies and scans to identify and select talents are offered by assessment centers, psychological consulting companies and consultants. It varies however what exactly talent scans measure: abilities, motivation, personality, competencies, motives and interests, intelligence; (see also Church & Rotolo, 2013; Christiaensen et al., 2009; Nijs, Gallardo-Gallardo, Dries and Sels, 2014). The method of getting this information also varies. Talent is measured, for example, through questionnaires, in-depth interviews, 360 ° feedback method or via card sets and online games (Christiaensen et al., 2009, Church & Rotolo, 2013; Nowak & Mashihi, 2012). The extensive range of talent scans makes it difficult for HRM professionals to keep seeing the forest through the trees and to choose a good and reliable scan.

In this article we will discuss the findings of an exploratory research into talent scans. The aim of the research is to gain more insight into the use of talent scans in practice and to examine a number of widely used talent scans, i.e. what they measure and how they do it. In this way, we strive to provide HR professionals with more guidance while making a well-considered choice for a particular talent scan.

The article starts with a brief explanation of the concept of talents and the way the data have been collected. Then we are going to discuss the results of the research. First of all, we will share the practical experience of HR professionals and representatives of assessment agencies and discuss in which situation(s) organizations use a talent scan, and which motives and considerations play a role in the choice of a scan. Important aspects of the use of the scan will be also discussed. Then we are going to go through the content inventory of eight commonly used talent scans. We will touch upon what the scan measures, how it is reported and what is known about its validity and reliability. We will end the article with a discussion and practical recommendations.

We are going to outline a framework: what is a talent and how can it be measured?

A dichotomy in scientific discussions about talents

In this case talent management involves attracting, identifying, developing and retaining this group of above-average employees. On the other hand, scientists who are adepts of positive psychology and HRD tend towards an inclusive approach. Based on the idea that everyone has talents, they advocate looking at the strengths of all employees (eg Meyers, 2015b). These strengths are unique characteristics of a person that are manifested in the tasks that this person performs better and with more pleasure than other tasks (Meyers, 2015a). In that case, talent management focuses on identifying and evaluating employees' strengths and creating circumstances in which employees are actually enabled to apply and develop their strengths

(Meyers, 2016). This approach is more about mobilizing and activating a talent and developing it than managing and achieving results on the basis of a talent.

Striving to a holistic and multidimensional approach to talents

The striking fact is that it is mainly thought in contradictions in science. However, practice is much more nuanced and varied than the dichotomy in science. Meyers (2017) claims that both the inclusive and the exclusive approach can have value and are suitable in practice. Research also shows that in practice both inclusive and exclusive approaches take place, and even the combination of both approaches within one organization is possible (eg MacFarnlane et al., 2012; Stahl, et al., 2012; Jones et al., 2012; Burbach & Royle, 2010, Valverde, Scullion & Ryan, 2013).

Instead of thinking in contradictions, some researchers (including Nijs et al., 2014; Thunnissen & Van Arensbergen, 2015) advocate for a more holistic view of talent. Scientists in educational psychology see talent as a multidimensional construction, consisting of multiple interrelated components that change and evolve over time (see, among others, Gagné, 2004; 2010; 2015; Heller & Perleth, 2008; Renzulli, 1978; 2005). The Differentiated Model of Giftedness and Talent (DMGT) by Gagné (2004, 2010, 2015) is one of the most used talent models and identifies five core elements of talent (see Figure 1).
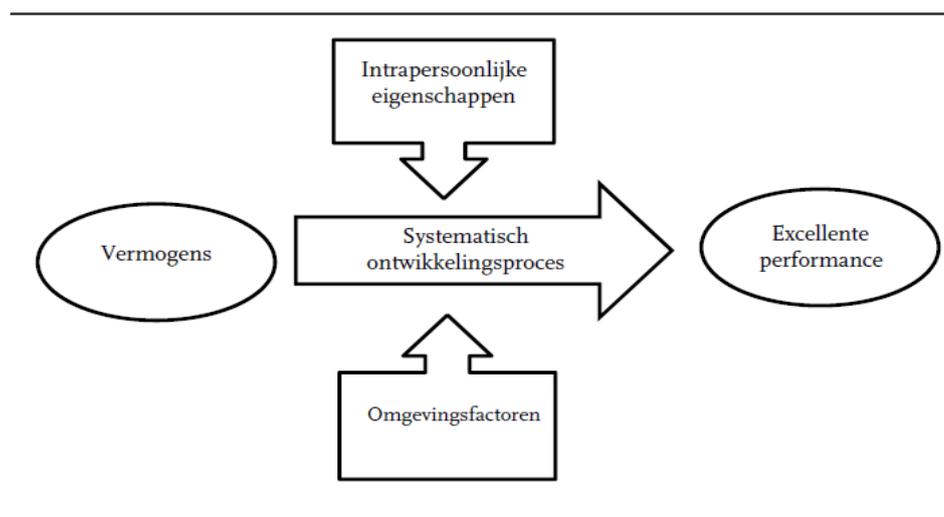

Figure 1. Talent as a multidimensional concept (based on: Gagné 2004; 2010).

Vermogens – abilities

Intrapersoonlijke eigenschappen – intrapersonal qualities

Systematisch ontwikkelingsprocess – systematic development process

Omgevingsfactoren – factors from the environment

Excellente Performance – excellent performance

First of all, the DMGT model distinguishes between **capabilities**. These are natural capacities or skills (Gagné calls it a gift or an ability) on the mental, physical and social level that give a person the potential to be good at something and to rise above himself. The examples are analytical ability, critical thinking, creativity and communication skills. However, according to Gagné, the mere presence of an exceptional ability is not a talent yet. We can only speak about a talent when a person can actually develop his qualities and knows how to convert them into an excellent performance. **Performance** is therefore the second core component of the DMGT model. Performance can be displayed in many fields, such as music, art, education and science, sports. Although Gagné's research focuses on the top performers (the top 10% compared to peers), Nijs et al. (2014) nuance the meaning of excellence and distinguish between interpersonal excellence (the extent to which someone does better than others) and intra-personal excellence (rising above oneself and getting the best out of oneself). The definition of performance as interpersonal excellence fits in with the exclusive talent approach, while intrapersonal excellence matches the inclusive, strong points approach mentioned above.

The development from ability to performance can be accelerated or hampered by two factors (Gagné, 2004; 2010): the intra-personal, non-cognitive traits and environmental factors. **The intra-personal characteristics** - the third component in the DMGT model – are such qualities as motivation, commitment and perseverance, but also the degree of self-management (concentration, work attitude, work and learning strategies), stress resistance and personality traits (self-awareness, temperament, locus or control). In other words: according to Gagné, drive and motivation are not talents, but aspects that can accelerate talent development. The **environment** can also serve as a catalyst. On the one hand, the context determines which talents are relevant (eg Nijs et al., 2014, Lewis & Heckman, 2006; Silzer & Church, 2010; Thunnissen & Van Arensbergen, 2015); and on the other hand, the people and circumstances in that environment can promote talent development or obstruct it.

Finally, the DMGT model states that talents do not automatically blossom, but that talent development requires constant training and exercise, or 10,000 flight hours that are essential according to Gladwell (2008). This brings us to the last component of the DMGT model: **the systematic development process**. Development should take place on the basis of a systematic and structurally enriching development program, in which objectives are set and evaluated and which is in line with the specific development pace and learning process of the person (Gagné, 2004; 2010).

In this research we use the DMGT model as a stepping stone to interpret the various components of talents (see also Thunnissen, 2016, Nijs et al., 2014). We define talent as 'a trait of a person that brings pleasure, satisfaction and excellent performance, if developed and deployed in the right context.' (Thunnissen, 2017). Unlike DMGT model, we are going to take a definition from Gagne's model into account, in addition to excellent performance - in which intra and interpersonal excellence can also be considered - in accordance with positive psychology, the well-being of the person in terms of pleasure and satisfaction.

Measuring talent

Although many scientific articles deal with the question of what a talent is (Thunnissen & Gallardo-Gallardo, 2017), there is hardly any research that makes an inventory of how organizations could identify or measure 'talent' themselves. In 2014, Sanne Nijs and colleagues (2014) published a theoretical article on defining, operationalizing and measuring talent. They state that the holistic, multidimensional approach to talent implies that when measuring talent, both the abilities and the intra-personal qualities are inventoried, to measure talent in its full scope. Moreover, according to Nijs et al. (2014) the combination of these two components is the best predictor of performance. Then they give an overview of categories of measuring instruments in their article: what they measure, by whom and in what way. However, this overview is still fairly global and does not specify which properties are exactly measured. In addition, it sticks only to the categories of instruments and no specific instruments and tests are discussed in more detail. Finally, the research does not give a picture of what actually happens in practice. We hope to be able to provide these insights with the current research.

Research method

The aim of the research is to (1) gain more insight into the use of talent scans in practice; and (2) to examine a number of frequently used talent scans for their measurement aim (what measurements it contains), validity and reliability and usability. The research consists of two parts: a practical study and a scan inventory.

Practical research

In the first place, a study was conducted into the use of talent scans in practice. For this research we have questioned HR professionals who are involved in the use of talent scans for identifying talents in their organization, on the one hand, and assessment agencies that conduct tests on behalf of organizations and report on them, on the other hand. The number of respondents is limited and that is why we speak of an exploratory study.

Before starting the research among HR professionals, we spoke with representatives of ten organizations. These organizations vary in size (both small and large organizations) and sectors (such as care institutions, educational institutions, financial services and consultancy). In an interview with the HR professionals we asked for (a) the vision on talent; (b) when scans are used; (c) which scans they use and on the basis of which criteria these scans are selected (d) how the process of choosing a scan proceeds. The participants of this study were recruited via the personal network of the researchers. Initially, we approached the organizations that were known to use scans to identify talents. Subsequently, the HR professional involved in the selection of the scans was also interviewed. The interviews were held in the spring of 2017, and were completely transcribed and analyzed afterwards.

To gain more insight into the way assessment agencies approach the identification of talents, we have formed a focus group with eight employees from different assessment agencies. Again, the participants were selected via the network of the researchers. Apart from the desire to involve several assessment agencies in the research, the willingness to share knowledge and experiences in with competing agencies during the session was also an important criterion for the selection of respondents. During the focus group discussion we discussed the following topics: (a) which talent

scans are used most frequently; (b) considerations when using a scan; (c) quality of the scans; and (d) results and usability of the scans. The meeting took place in September 2016. The meeting was recorded in a report, which was submitted to the participants for approval.

Scan inventory

A total of twelve commonly used tests and instruments in the Netherlands have been mentioned in the interviews and by the focus group of the practical research mentioned above (see results, Table 1). The aim was to conduct an additional, in-depth analysis of some of these scans. The availability of the instruments was an important selection criterion. Only tests that we were allowed to see and use free of charge were included in the study. It was also important that the expert who made the scan available for the study was prepared to provide more information about the test. Eventually we were able to collect additional information from eight scans (No. 1-8 in Table 1). It concerns information about: (a) what exactly does the scan measure?; (b) what or who is the norm? (c) what is known about the validity and reliability?; (d) What is the usability of the test? This information was obtained by completing the scan by one of the researchers (question a, b & d), the debriefing with the expert (at / md), and additional information via the internet, including the site of COTAN1 (question c). The data were placed in an Excel file and then analyzed.

Results of practical research

In this section, we are going to discuss the use of talent scans in practice. The interviews with the ten HR professionals are our starting point, and we supplement them with the information from the focus group with eight representatives of assessment agencies.

Vision of talents

We started the practical research with the question what the interviewees mean by talent. In general, HR professionals have an inclusive view of a talent, and believe that everyone has a talent for something and it manifests itself in different ways. This approach can be seen in the talent policy of their organization: the HR professionals say that compared to the past more attention is paid to 'what I can do well and how it is best expressed' instead of 'what I cannot do really well and should improve '. It is endorsed by the assessment agencies in the focus group. It should be noted that HR professionals from the organizational and consultancy sector indicate not only the inclusive approach but also an exclusive approach in their organizations. The high potentials in their organization are offered special trainee programs, with the aim of keeping talents inside the organization and subsequently transferring them to managerial positions within the organization.

In addition to the inclusive approach, the vision of HR professionals surveyed is characterized by a broad, holistic view of talents. They see talents as a combination of the right skills and motivation which leads to good performance. The context is also extremely relevant: the environment in which someone works can be stimulating or discouraging for the expression of his/her talents, according to them.

Motives for the use of talent scan

During the interviews HR professionals say that scans are mainly used for development and mobility issues, and not so much as an instrument for attracting and selecting talents (or recruitment and selection process). First, a talent scan is used for voluntary mobility, for example for employees who feel that they are not in the right place and want to make a switch to a

different position or job. Scans are also used for forced mobility, for example when contracts are not renewed or reorganizations take place. Finally, without immediately leading to internal or external mobility, a talent scan is used for the employees who feel the need to develop but do not know what direction to follow. Insight into one's own talents can in all give direction to the orientation and development process in all these cases, according to the interviewees.

Selection process

When an employee reaches out to an HR professional or a career advisor for help, it is of paramount importance, according to the interviewees, to provide insight into what the help request really is, and which talent scans would fit best. After getting this information, it is time to start choosing one or multiple scans. Organizations do it themselves or under the supervision of an assessment agency. The interviews and the focus group show that a variety of talent scans is used to map out talents (in the next paragraph we are going to discuss which ones exactly). In addition to talent scans, organizations often use other interventions (they call this: 'additional support') to obtain additional information about the employee and his talents, such as feedback from supervisor and colleagues (360 ° feedback method).

After deciding on a talent scan and obtaining additional information, there follows a feedback interview with an employee. This is almost always a standard procedure for assessment agencies. In this interview, it is checked whether the employee recognizes himself in the results and considers them to be useful. Both HR professionals and assessment agencies attach great importance to this 'face validity', or the extent to which a scan seems to measure what it is all about. The interviewees also emphasize the importance of a follow-up when the employee is assisted in setting new career steps, for example through coaching by an external coach or the direct supervisor, or through e-coaching.

Criteria for the selection of talent scans

We asked a question: on the basis of which criteria a specific scan is chosen. Various, mostly practical criteria appear to play a role:

1. Talent scan must fit the organization's goal and meet employees' help requests: Based on the employees' help requests and the organization's goal, it is decided which scan(s) will be used. The interviews show that if the employees' help requests are not clear from the very beginning, it may lead to bottlenecks later in the process, for example, it may result in the choice of a wrong talent scan or insufficiently suitable career development plan.

2. A good price-quality ratio: HR professionals indicate that the price of a talent scan is a decisive factor. In practice, for this reason, it seems preferable to take one scan and thus measure only one aspect of a talent, even though HR professionals indicated that they have a holistic view of a talent in their vision of talent. Especially for small organizations, the cost is an important limitation in the use of talent scans. However, if it turns out that one scan is not sufficient (for example because the talent scan does not contain all aspects to be measured), it is sometimes decided to purchase multiple scans. According to HR professionals, it there should be a logical sequence while choosing scans, so that the second scan also provide more precise additional information (for example an assessment that tests managerial skills, after a motivation test has shown that someone really likes to lead people).

3. A realistic time investment for both an employee and an employer: As it appears from the interviews, the time load must remain limited. The preference is therefore for one or more (online) talent scans that the employee can fill in at home. Not only does it save time for the employee, but employees also like to be able to complete a scan in their own environment, in peace and without too many stimuli, according to HR professionals. The respondents also consider it desirable if the costs remain limited for the organization. It is not practical for the organization if the HR professional has to hold several interviews after a talent scan has been completed. Smaller organizations in particular do not have the time and the staff for this.

4. A useful and application-oriented report: Different conditions are set for the usability of the report. First of all, it should be a report readable for the employee, without unnecessary jargon. In addition, it is indicated that a report must be formulated in a positive and development-oriented way, concentrated on the strengths of an employee (and not just on the weak spots) and with a translation of possible development points into concrete suggestions that the employee can carry out himself. Finally, it is important to HR professionals that the findings should be placed in a context in the report, and this is what is called (in the report and/or the additional interview) a stimulating environment for the employee with his/her talents, and possibly also the environment is less suitable.

In contrast to the criteria mentioned by HR professionals, the assessment agencies mention the importance of the psychometric qualities of the scan, namely reliability, validity and distinctive character. They usually check whether the talent scan is mentioned in the COTAN and how it has been assessed. It is also important to them that the scan is 'culturally neutral', and can therefore be filled in by various groups. The participants of the focus group also consider it important that the assessor has knowledge of the talent scan and knows how to interpret the results. Finally, it should be noted that where HR professionals indicate that they prefer to use one scan, the participating assessment agencies report that they generally take a capacity test, plus a personality or drives/interest test(s). According to them, this information combined provides a complete picture of the employee.

Most used scans

In the exploratory case study, both assessment agencies and HR professionals have listed twelve scans that are widely used and known within their professional field. These are listed in Table 1.

1. STRENGTHS FINDER (from Buckingham & Clifton)
2. VIA KRACHTEN-VRAGENLIJST (strengths questionnaire) (from Peterson & Seligman)
3. TALENT MOTIVATION ASSESSMENT METHOD (TMA)
4. Q1000 QUESTIONNAIRE (from Elloo)
5. ME.-SCAN (from True Talent Team)
6. NEO (Personality questionnaire by Paul Costa and Robert McCrae)
7. INSIGHTS DISCOVERY (from Insights Benelux)
8. TALENT BUILDER (from Luuk DeWulf)
9. DISC (personality test)
10. DARK SIDE QUESTIONNAIRE (from Hogan)
11. OPQ (from SHL office)
12. TALENTWIJZER (from Djoerd Hiemstra)

Table 1. Overview of frequently used talent scans

The group of HR Professionals have also mentioned two scans that do not consist of questionnaires but of a game. The 'Bring Your Talent In Card' game (developed by Gerdi Geersing) consists of cards with different skills and traits, during the game a person should choose which of them suit him or her best. The game provides insight into the talents of a person, how these can be used in work and daily life and in what environment these talents completely unfold. In addition, two of the interviewed HR professionals use the game-based assessment Cognisess (www.cognisess.com). This assessment maps both one's personality and one's cognitive and emotional skills, behavior and core qualities. It uses predictive people analytics, which means that based on the analysis of 'big data' it makes a prediction about the talents that are the most suitable for a specific function. Afterwards, the report offers an extensive representation of person's talents, and a possible match (expressed as a percentage) with a certain function.

Results of the scan inventory

For the eight of the above-mentioned scans (No. 1-8 in Table 1) we have found additional information about the measurement accuracy (including the comparison of standards), the validity and reliability, and the usability of the report (see Table 2 and 3). This information was obtained through completing the scan, a debriefing with an expert and a search on the internet for that scan (including the site of COTAN).

Measurement aims

We are going to start with the measurement claims of the talent scans, or what the scans aim to measure (1st and 2nd column Table 2). All scans proceed from the principle that you function best if you abide by your own qualities and preferences. In particular, an emphasis is placed on what someone can do or does really well. Some scans also identify one's pitfalls. The scans differ in what exact qualities they measure. Three scans are clearly based on the strengths approach from positive psychology mentioned above (Strength Finder, TALENT BUILDER and the VIA FORCE QUESTIONNAIRE), and measure a mix of what Gagné calls capabilities and intra-personal qualities. Essentially, each of these three questionnaires is based on its developer's own model. The other scans focus on identifying purely intra-personal qualities. Four scans measure personality traits (ME.-SCAN, Q1000, INSIGHTS DISCOVERY and the NEO), and are based on personality models such as the Big Five, AB5C model or the Carl Jung model. The latter (TMA) measures drives and therefore motivation, and finds its basis in the needs theory of Henry Murray.

Most scans measure a big amount of different qualities (see column 3, Table 2), using a wide set of items (column 4, Table 2). The scope of the scans varies from about 100 to more than 300 positions. Taking the scan/the assessment test varies from 15 minutes (NEO and the VIA FORCE QUESTION LIST) to one hour 25 minutes (TMA, with 312 items), but takes an average of one hour.

Almost all the scans consist of a questionnaire that can be filled in both digitally and on paper. An exception to this is the ME.-SCAN, which uses images. For three scans, two statements are presented to an employee (which are related to certain characteristics) and he/she must indicate which position is the most applicable, or three or four statements must be placed in a range/hierarchical order (for example, for Strength Finder and TMA). In such a way talents/qualities are ranked 'within' one person. The four other scans ask the employee to indicate for each position (on a 5- or 7-point Likert scale) to what extent the statement applies to him (e.g. Q1000 and VIA Force Questionnaire). Multiple statements are used to measure one

quality. Eventually all the qualities are arranged in the report based on the total scores per scale or quality. The higher the score, the more likely the person completing the test has recognized this quality in himself. For all talent scans, the report indicates which characteristics are the most applicable to the candidate (whether or not limited to a top five); these are then labeled as talents. It varies enormously per test (see section 'reports' for more information about it) how extensive the reports are.

Column 2 of Table 3 shows that four of the eight scans do not use standard groups (STRENGTHS FINDER, Talent builder, VIA POWER QUESTION LIST and ME.-SCAN). They mainly focus on intra-personal excellence, and thus on the qualities that best characterize a particular person. This also fits in with the strengths approach that these scans stand for. The other scans - mostly personality and motivation tests - do use norm groups and research in what aspects the person in question stands out compared to the standard group. This refers to what we have previously called interpersonal excellence, and according to Nijs et al. (2014) this method of standardization would fit better with an exclusive talent approach.

Validity and reliability

We have subsequently checked whether the information is available on how valid and reliable the scans are (see Table 3). Validity means that a test actually measures what it should measure. Reliability refers to the accuracy and precision of the measurement procedure, and whether a test is free of measurement errors.

For the two scans, no studies on the validity and reliability of the instruments are known to have been carried out (TALENT BUILDER and ME.-SCAN). In two other scans, this research was carried out by the developers themselves (STRENGTHS FINDER and TMA), and in the other four, the validity and reliability were checked by external experts. In a small search on the internet we only found scientific articles about the psychometric qualities of the VIA FORCE QUESTIONNAIRE, Neo, INSIGHTS DISCOVERY and a very limited amount of articles about the Strengths Finder (that research was done by the scientists who developed the scan). However, Dutch-language reports with psychometric data are available about Q1000 and TMA.

For those with available data, the reliability and validity of the measuring instruments seem to be sufficient. The use of ipsative data - i.e., choosing between certain positions by which qualities are arranged within one person - can affect the reliability and validity of a test, depending on how the items are presented. The use of ipsative data is in direct opposition to the use of normative scores, often using e.g. 5- or 7-point Likert scales. The disadvantage of these scales is that the test can make little distinction between different talents/qualities when a candidate evaluates everything positively or negatively.

Reports

We also looked at the usefulness of the talent scans, in particular by looking at how the results are reflected in a report and a final interview. This varies greatly. For the Insights Discovery, the TMA, the Q1000 and the ME.-SCAN, it is a standard procedure that the results are extensively discussed, for example, with a professional from an assessment agency before receiving an extensive report. For The Neo, the Via Force List, the STRENGTHS FINDER and the TALENT BUILDER the assessments are often filled out individually (online) and are not always discussed with a professional, while practical research has shown that this review is so appreciated. The reports of the first-mentioned scans also provide more extensive personal descriptions and the outcomes have been attributed more concretely to the context of the work; concrete suggestions are made for the context so the employee can optimally develop and use his talents.

Conclusion

Most talent scans are available in multiple languages and are used worldwide. For example, the STRENGTHS FINDER is available in 20 languages, the VIA FORCE QUESTIONNAIRE in 17 languages, the NEO in 11 languages and the INSIGHTS DISCOVERY is even available in 40 languages. The TMA is available in seven languages and the ME.-SCAN is available in English and Dutch. We could not find out whether a scientific procedure ('back translation') was used for the translation.

In the previous section it was noted that the costs of a talent scan play a major role in the selection process. In the scan inventory, we have indeed noticed that the costs of the talent scans vary enormously. The VIA FORCE QUESTIONNAIRE is free to fill in, and for further deepening of the results by means of additional reports an amount of 20 or 40 dollars will be asked. The STRENGTHS FINDER and TALENT BUILDER are accessible through the purchase of a book, containing a code that gives online access to the questionnaire. Both books cost around 30 to 50 euros. The TMA, Insights Discovery, Q1000, the NEO and the ME.-SCAN can only be accessed through an assessment agency or a career advisor, so the costs are many times higher

Conclusion and discussion

In this research, the use of talent scans in practice has been mapped out, with the aim of offering HR professionals more guidance in arriving at a well-considered choice for a talent scan on the basis of the research results. First we have discussed the most important outcomes, after that we gave a number of recommendations for practical use.

HR professionals indicate that they have a broad, holistic view of talents. The striking fact is that, it is often decided to use only one or two talent scans for mapping out talents because of money or time constraints. This choice entails the risk that talent is not measured and mapped out in its full breadth (Nijs et al., 2014). The research shows that most talent scans focus on measuring either abilities or intra-personal characteristics: abilities, personality traits, drives or motivation. However, it should be noted that intra-personal qualities are not talents but factors that help to use or develop a talent according to Gagné. Only a single scan measures both components from the DMGT model. Performance and context, two other crucial elements in the DMGT model, are not measured, although on the basis of the person's talents a statement is made about the ideal environment for the employee. Some of the talent scans we have examined pay more attention to the surroundings where an employee is able to flourish more than others. In particular, the scans

that are used by assessment agencies and career advisers ensure better embedding and usability in the work context. However, it is not clear how that advice comes about.

The performance itself is not measured by any of the scans. It is also questionable whether a scan is the right instrument for it. Measuring performance as a measure of talent (utilization) does not fit in with the inclusive approach that HR professionals say they endorse. Moreover, Nijs et al. (2014) recommend measuring performance, because it makes it clear what someone can do now, but not where his or her development potential lies.

In particular, talent scans that measure motivation and personality are based on existing models and measuring instruments, which are now labeled as talent scans. In that respect, we see a change in relation to the past. It seems that scans are not used so much to identify shortcomings and pitfalls with the aim of further improvement in a follow-up process, as happened in the past (for example in competency management). The emphasis now lies on identifying the most distinctive characteristics and strengths of the person, and then further develop and utilize these in a work context in which they can be used to the full. Positive psychology seems to have produced its effect.

The scans vary widely in what talents and qualities they measure and how they do it. Apparently, among the developers of talent scans and the experts involved in applying them there is a disagreement on what talent exactly is. This variation makes it difficult for HR professionals to compare the scans on the subject of their content. For six of the eight scans examined, research was conducted into the validity and reliability. It seems to be in order, although the research has not been performed by independent parties in all cases. However, some of the personality questionnaires are based on Carl Jung's theory. The typology of Jung is no longer accepted by scientific psychology (Don Mcgowan, 1994; Richard Noll, 1997), and has been replaced by more empirically-based model of the 'big five' personality traits (extraversion, altruism, conscientiousness, neuroticism, openness) that allow more nuances than the Jungian model. Our advice is therefore to give preference to personality questionnaires based on the Big Five. When it comes to the reliability and validity of the scans (including the underlying model) VIA Strengths Questionnaire (measuring combination of capabilities and intrapersonal characteristics), Q1000, NEO (both personality questionnaires) and TMA (measuring drives) come out most positively from that comparison.

We mainly checked talent scans based on questionnaires. The fact that gamification has recently appeared in HR, and therefore also in talent scans, is interesting, but still involves methodological problems for the reliable and valid measurement of talents. The scans that make use of game techniques are often still so new that research into validity and reliability has not yet taken place (and, moreover, it is also very difficult from a technical point of view). It is good to be aware of it when using such scans. In addition, we encourage the developers of these talent games to at least base the game on solid and research-based models that have proven their worth, and to further investigate their reliability and validity.

The research shows that HR professionals are not primarily guided by quality criteria but mainly have practical reasons for the choice of a specific talent scan in practice. The ease of use comes first; Preference is given to a scan that does not cost the organization much time (e.g. the possibility to fill in the questionnaire at home) and money, and generates insights and a report that can be used in practice. Presumably people believe that each scan actually measures what it should measure.

The research has a number of limitations. In the first place, the research has a limited scope. We have not only spoken to a small group of HR professionals and representatives from assessment agencies, but we also examined only a small fraction of the total range of talent scans in the scan

inventory. The research therefore mainly has an exploratory character. It is advisable to examine the usability and quality of other scans in a follow-up research. An expansion of practical research - possibly through a large-scale survey among HR professionals - can also provide valuable additional information. Moreover, we have focused on the experiences and opinions of a select group of users of talent scans: HR professionals and experts from assessment agencies. We also paid no attention to the experiences and opinions of the employees who undergo a talent scan. In order to get a complete and full picture of identifying talents in practice, additional research among other stakeholders is desirable. Finally, in the description of the scans it has proved impossible to display all the details of the talent scans, for example the operationalization of the scales, the way in which the scoring occurs, what the reporting looks like. In particular, the extensive talent scans, such as the TMA, the INSIGHTS DISCOVERY and the Q1000 contain a comprehensive manual and report. For more concrete information about this, we refer to the developers of these tests.

Practical recommendations

The following recommendations for HR practice can be derived from the study.

1. *Provide a clearly formulated help request: what insight do people wish to obtain by using talent scans?*
   A clear help request ensures that the right scans are used and prevents problems in the follow-up process after the scan(s) has been completed, according to the HR professionals interviewed. Our advice is therefore to start with an introductory discussion, carried out by an HR professional or by an assessment agency, which will help to figure out what exactly is required and what instruments will help the employee to identify his talents.

2. *Use multiple instruments to measure talent*
   Due to restrictions in time and money, only one talent scan is often chosen. It is understandable, of course, but if talent is seen as a holistic construction (Gagné, 2004; 2010), it is advisable to use several instruments when measuring talents, in which the abilities and the intra-personal characteristics are mapped out. Measuring only capabilities or the intra-personal characteristics, gives a too limited picture of talents (Nijs et al., 2014). In the research we have looked at self-tests and questionnaires for identifying talents, but there are also other instruments and methods for this. Requesting feedback on the strengths of a person from colleagues and managers is an affordable way to obtain more information about employee's talents.

3. *A good scan should be usable in practice and well- substantiated..*
   Practical usability comes first for HR professionals. Our advice is to pay attention to both the usability and the quality of the scan when selecting a talent scan. Inquire, among other things, about the validity and reliability of the scan. If these data are not available, it is better to consider choosing another instrument that has been validated, and thus has already proven its worth (as the range of talent scans nowadays is enormous). The website of COTAN (www.cotandocumentatie.nl) provides information about the validity and reliability of many measuring instruments.

4. *Know what a talent scan measures*
   In practice, we advise HR professionals to be more critical with regard to the talent scans they use, and to investigate what exactly these tests and instruments they have in mind measure, and to what extent these tests correspond with their own approach to talent (see also Nijs et al., 2013).

For example: when an organization advocates an inclusive talent approach, the use of instruments in which the employee's scores are compared with a norm group (interpersonal excellence) is less applicable than instruments in which, for example, the development of the employee over time (intra-personal excellence) is inventoried.

5. *Reports must contain practical advice on the setting*
The DMGT model sees the setting as an important moderator in the development of talent. The practical research also shows that the setting is important. Our advice is therefore to choose a scan that pays attention to the setting in which the employee can best develop and use his talents.

6. *Facilitate a good follow-up*
All interviewees agree: a talent scan alone is insufficient. A good assurance in a follow-up process - with a coach or the manager - is crucial. Where no assessment agency or career coach is used, we advise the HR professional to work together with the employee (and his supervisor) on the development and use of talents in practice.

SUMMARY

This article presents the findings of an exploratory study on the use of talent scans in practice. The data is gathered by interviews with HR-professionals and representatives of assessment agencies, and by an analysis (in terms of content, validity and reliability) of eight frequent used talent scans. The study shows that although HR-professionals have a holistic and multidimensional view on talent, in measuring talent they often prefer to use one talent scan that only focuses on a single aspect of talent. The choice for a specific scan is often based on practical reasons (the usefulness of the scan in practice, and the limited costs in time and money) and not necessarily on the quality of the scan, i.e. its validity and reliability. The eight talent scans which were investigated in our study appear to be valid and reliable, yet all measure different aspects of talent and they measure them differently. We recommend HR-professionals to be more critical on the talent scans they use, and to only use scans that are relevant for practice and rigorous in the way they measure talent.

Final notes

1. *COTAN stands for Dutch Committee on Tests and Testing. The COTAN is a board committee of the Netherlands Institute of Psychologists (NIP) and has the mission to promote the quality of testing and the use of testing in the Netherlands. Website: www.cotandocumentatie.nl*

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Appendix: tables

Table 2. Talent scans ordered according to: measurement pretension, underlying theory / models, scales and method of measurement.

Name	What is measured	Underlying theories/models	Scale	How are the variables measured
STRENGTHS FINDER (Buckingham & Clifton)	Talents are strengths: "the ability to consequently attain almost perfect results in a certain activity". Talents are seen by Clifton and Buckingham as "raw materials". These talents can develop into strengths through thorough learning and practice. Strength Finder measures talents (how we think, feel and behave) that have a clear relation with our work or studies	Strength-based approach of Buckingham & Clifton.	34 talents are measured in total In the report, attention is paid to the five most dominant talent themes.	A questionnaire consists of 177 statements where 2 statements are placed opposite each other and the person is supposed to choose what statement applies to him/her most and what statement – least.
TALENT BUILDER (Luuk De- Wulf)	Talent is a unique gift, a natural predisposition to something. Talent can be seen in every activity that you can do without any efort and that gives you the feeling of satisfaction. That is what DeWulf calls "talent in action". Leverage skills are the skills that help you apply these talents more effectively TALENT BUILDER measures talents and leverage skills	Talent model of DeWulf	39 talents including leverage skills are measured	The scan consists of 2 questionnaires with 243 statements in total: a talent test and a leverage skills test. The person should indicate for every statement to what extent it applies to him on the scale from 1 to 5.
VIA KRACHTEN-VRAGENLIJST (Peterson & Seligman)	Talent is a strong point, a strength. If you have developed it you can start looking for the way to apply it more often and to develop it further. Knowing your strong points	Positive psychology of Martin Seligman	22 character traits are measured on 5 dimensions: • Wisdom and knowledge: Creativity, Curiosity, Resilience, Inquisitiveness, Perspective • Courage: Courage, Perseverance, Honesty, Zeal • Humanity: Love, Kindness, Leadership	A questionnaire with 120 items where a person should indicate to what extent the statement suits him/her on the 5 point scale. The selection varies from

Name	What is measured	Underlying theories/models	Scale	How are the variables measured
	is the first step to a happier and more genuine life. The VIA KRACHTENVRAGENLIJST measures strengths		• Moderation: Forgiving, Modesty, Wisdom, Self-regulation • Transcendence: Valuation of beauty and excellence, Gratitude, Hope, Humor, Spirituality.	"suits me very much" to "doesn't suit me at all". 5 questions per a trait of character
ME.-SCAN (True Talent Team)	Talents are competencies that you didn't choose but can develop naturally. ME.-SCAN measures natural qualities and vulnerable forces. Natural qualities give energy, while vulnerable forces reflect the pitfalls of someone and cost energy. The pitfalls can have a restrictive effect on the development of natural qualities and talents. The correlation between the choices in the two parts of the scan shows to what extent someone recognizes his or her natural talents and to what extent he or she has developed these talents. At the same time it becomes visible which obstacles and pitfalls someone can encounter without being fully aware of it.	Personality model of Carl Jung and Big Five model	8 archetypal images and 24 competencies are presented.	The scan consists of 2 parts. The first part uses positive and negative associations with 8 archetypal images. In the second part of the ME.-SCAN, the competencies a person must choose from 24 competencies that best correspond to his/her own qualities. The ME.-SCAN is not a questionnaire, but uses images and competency maps.
Q1000 (Eelloo)	Talents are those personality traits that can make a difference. They are positive qualities that ensure that someone carries out their work in a unique way. By knowing and using your talents, you can get more out of your work than you	Big Five model and AB5C model	No clear information about the number of scales. Depending on the chosen report, it is reported on: talents, competencies, leadership or qualities. Other scales are used in each report.	Questionnaire with 188 items, with answers on a 5-point scale that indicate whether a statement applies (from 'doesn't apply' or 'hardly applies' to 'applies completely').

Name	What is measured	Underlying theories/models	Scale	How are the variables measured
	used to. Q1000 measures personality.			
INSIGHTS DISCOVERY (Insights Benelux)	Talent is your unique personality; your most natural self. The questionnaire measures personality on the basis of preferred colors. The colors refer to behavioral preferences that determine how you respond, think and act.	Personality model of Carl Jung	A personality profile based on 4 colors that everyone has to a greater or lesser degree. The four colors refer to behavioral characteristics that we prefer to show. Red = steering and result-oriented; Yellow = enthusiasm, inviting; Green = harmony, meaningful relationships; Blue = analytical. A combination of these colors leads to 8 roles: reformer, decision maker, motivator, inspirator, mediator, supporter, coordinator, observer.	25 positions with a total of 4 statements. These four statements are put in order from very recognizable to the least recognizable at work. The least and the most recognizable ones are chosen, and for the 2 intermediate positions there is a choice between 1 (here I do not recognize myself) to 5 (here I recognize myself very strongly).
NEO	NEO measures personality. The tool can be used to gain a better understanding of yourself and the style of work.	Big Five model	Five domain scores: neurocitism, extraversion, openness, altruism and conscientiousness.	The questionnaire consists of 2 variants: Neo-PI-3 (long version, 240 items) & Neo-FFI-3 (short version, 60 items). The filler indicates on a 5-point scale whether he agrees to the given statements or not.
TMA	Talent is a strong need. TMA measures drives (and with it the motivation), talents and competencies. Drive is a need, talent is a strong need (high or low drive scores are the result). Competency is the need for a certain drive.	Henry Murray's theory of psychogenic needs	TMA measures 22 drives and 44 talents for 6 dimensions: Emotional balance, Motives, Social talents, Influential talents, Leading talents and Organizational talents. More in detail are these: Ambition & Challenge, Variety, Need for respect, Decision making, Conformism, Confrontation, Purposiveness, Dominance, Self-esteem, Energy & Action, Extraversion, Helpfulness, Independent thinking & Acting, Respect, Order & Structure, Pragmatism,	Questionnaire with 312 statements, where the candidate has to choose between 2 statements. For 52 questions, you are asked to place 3 statements in order of their importance to you. Each statement belongs to one of the 22 drives.

Name	What is measured	Underlying theories/models	Scale	How are the variables measured
			Sociability & Contact, Social empathy, Need for support, Stress management & Pressure, Accountability & Leadership, perseverance.	

Table 3. Psychometric characteristics of the talent scans: comparison standard, reliability/validity and Cotan.

Name	Comparison standard	Reliability and valdity	Cotan
STRENGTHS FINDER (Buckingham & Clifton)	Intrapersonal	Research on reliability and validity has been carried out by developers themselves, not by external parties. Cronbach's alpha and test-retest insufficient at 16 of the 34 scales. The test is offered in 20 languages. We could not find out whether a scientific procedure (back translation) was used. Ipsative way of approaching, making a forced choice between items of different scales. In addition, some items fall under multiple scales. How the scoring progresses is unclear. This makes it difficult to calculate validity (convergent and divergent) and factor analysis.	No
TALENT BUILDER (Luuk De- Wulf)	Intrapersonal	No research on reliability and validity is known to have been carried out.	No
VIA KRACHTEN-VRAGENLIJST (Peterson & Seligman)	Intrapersonal	Various studies available on validity and reliability by e.g. Park et al. (2004), Peterson et al. (2006). Validity and reliability are sufficient. Research was also carried out into the validity and reliability of the questionnaire among Japanese, German, African and American experts.	No
ME.-SCAN (True Talent Team)	Intrapersonal	No results of reliability and validity available. We have looked at 'face validity' through experiences from coaches, therapists and other users. The experiences show a very consistent recognizability and predictability of behavior as made visible by ME.-SCAN.	No
Q1000 (Eelloo)	Interpersonal. Two norm groups: for the selection of candidates (n = 1109) and for career candidates (n = 596).	Research into reliability and validity. Carried out by Eelloo itself, and by COTAN. Eelloo has also set up norm groups itself. Test-retest reliability between .80 and .91. To sum it up, on the basis of the research done to construct validity so far, it can be said that the scales and the structure of Q1000 correspond to the theoretical starting points.	Cotan listing: • Starting points for the test construction: good. • Quality of the test material: good. • Quality of the manual: good. • Standards: sufficient. • Reliability: sufficient. • Concept validity: sufficient. • Criterion validity: insufficient

Name	Comparison standard	Reliability and valdity	Cotan
INSIGHTS DISCOVERY (Insights Benelux)	Intrapersonal and interpersonal. Norm group: general population of men and women (n = 36851). Standard data come from (national and international) management companies.	Scientific research into reliability (cronbach's alpha and split-half) and validity (construct validity by factor analysis). The Dutch version has a good Cronbach's alpha .90 - .94. Split-half pearson correlations are good, .75 - .87. There is also evidence for the use of 4 factors (Benton, Schurink & Desson, 2008).	No
NEO	Interpersonal. Norm group = Dutch population by gender, age, level of education. Data norm data from 2012 (short version, n = 1242) or 2013 (long version, n = 1715).	Various studies on validity and reliability available for both short and long versions, including COTAN. Internal consistency is good from the domain and facet scales. Test-retest after 5 months at item level good, ranging from> .8 - .68: Test-retest of five of the three domain scales above .9 and two between .8 and .9.Lots of research on content and construct validity, is good . Factor analysis the five factors come back.	Cotan listing extended version: • Starting points for test construction: good. • Quality of material: good. • Manual quality: good. • Standards: insufficient (data too old). • Reliability: sufficient. • Concept validity: good. • Criterion validity: insufficient (no research). • Short version same entry, only concept validity: sufficient.
TMA	Intrapersonal and interpersonal. Norm group: general population of men and women, varying in educational level and work sectors (government, commercial sector, n = 8864).	Research on reliability and validity has been carried out. Carried out by TMA itself. Test-retest (after 7 months) reliability: repeated measurements with the same respondents gives good comparable results (among 472 men and women aged 15 to 63 years). The correlations varied between .78 and .88 Cronbach's alpha of the 22 scales varied between .71 and .82. Criterion validity is measured with the OPQ, many scales of the TMA correlate positively or negatively with the OPQ.	No