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Title: People's beliefs on the origins of talent – the implicit theory of talent in different job and study groups (a Polish study)

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People's beliefs on the origins of talent – the implicit theory of talent in different job and study groups (a Polish study)

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Abstract

A sample of 465 participants was tested in order to identify the implicit theory of talent. Qualitative and quantitative analyses of the gathered data allowed for the identification of 14 categories in which participants defined talent and its determinants. The most common category was “innate”; however, participants’ answers often related to an interactive aspect, which linked predispositions with work and development. Correspondence analysis revealed three groups differentiated in their beliefs regarding determinants of talent. Psychologists and pedagogues fell into the interactional group (innate-acquired), while artists’ beliefs related to the acquired aspect. In the longer term, it would be desirable to examine motivations of people who differ in their implicit theories of talent.

Keywords: *talent, implicit theories, nature or nurture, innate or acquired, Poland*

Introduction

In the scientific discourse of talent and giftedness two distinct standpoints regarding the origin of talent can be identified, namely the so-called “pronats” and “antinats” (Ericsson, Nandagopal, & Roring, 2009; Gagné, 1999, 2009, 2013; Sloboda & Howe, 1991, 1999). While analyzing the arguments of both approaches proponents, one’s attention is drawn by terminological ambiguities within the formulated definitions of talent. Contemporarily, the word “talent” is used in

various social situations as different as music contests, sporting events, daily life and educating young people. Thus, it seems that the discussion on the origin and core of talent should be enriched with research into the social understanding of this concept.

As Dai (2009) observes, contemporarily the models of giftedness need to be useful and, therefore, should comply with certain premises. Research aimed at clarifying the implicit theory of talent should provide us with a possibility to comprehend perceptions of the concept of talent, and, therefore, make for a correct way of communicating and exerting influence on “talents”. Knowing how the concept of talent is understood by recipients or society in general, we could formulate our communications in a clear and precise manner.

A matter of particular importance is the understanding of the perceptions of the concept of talent in the light of a reported influence which labelling may exert on gifted students. The consequences can be both positive and negative. The positive consequences include, among other things, introducing a broader array of teaching methods and tools provided for students as well as enhancing individual work and interactions between teachers and gifted students. The negative consequences are mainly social aspects related to students’ fear of failure as well as exorbitant and inadequate expectations formulated by teachers and parents (Machů, Kočvarová, & Císlarová, 2015; Moulton, Moulton, Housewright, & Bailey, 1998) and social isolation (Heller, 2004).

To date, research on the social understanding of the concept of “talent” has yielded a conception where the definition of talent involves five criteria. The pentagonal implicit theory of giftedness (Sternberg & Zhang, 1995) incorporates criteria for naive theories of giftedness. These theories do not necessarily conform with scientific theories. According to the **excellence criterion**, a higher level of abilities in one or several areas is typical of a gifted individual relative to peers. In line with the **rarity criterion**, being gifted requires the specific ability which characterizes the talented person to be rare among peers. **The productivity criterion** highlights that tangible results of a given ability need to appear or at least have the potential to do so. The focus of the fourth criterion, namely **demonstrability**, emphasizes the possibility of proving one’s ability in certain tests or other relevant methods of verifying certain giftedness. The last criterion, namely **value**, is related to an ability which needs to meet all the previously mentioned criteria and, at the same time, be recognized as valuable by a reference group, particularly the whole society. This means that while certain abilities may be evaluated differently within different cultural and historical contexts, implicit theories of talent/giftedness will be formed differently in different times and places (Sternberg & Zhang, 1995).

Research carried out on a Polish sample revealed that definitions of talent present in social beliefs are constructed similarly to Sternberg's theorization; talent is regarded as something unique (*rarity*), above-average, exquisite (*excellence*) and outstanding among other people. Subjects' answers, however, lacked categories which would correspond with the criteria of productivity, value or demonstrability (Chełkowska & Kałmuk, 2014). While Sternberg's theorization elaborates on the definition of talent, it does not analyze beliefs on its determinants. Therefore, it seems reasonable to supplement his implicit theory of talent with other relevant factors.

Aim of the study

The study aim was to identify beliefs on the determinants of talent through a verification of certain denotations and relationships between their occurrences in subjects' answers. In the light of previous findings, it may be established that talent is regarded as a unique and distinctive ability/giftedness which facilitates taking actions in a given area (Chełkowska & Kałmuk, 2014). This work attempts to analyze the determinants of talent within individual beliefs as well as their relationships with the subjects' fields of education and occupations. The inclusion of subjects' performed or learned occupation as a variable, which may be linked with beliefs on the determinants of talent, was aimed at verifying whether knowledge and experience related to individuals' branches and fields of study influence their beliefs on the nature of talent. It may be assumed that if an individual is knowledgeable about inheritance of traits or shaping skills (which is likely to be true for fields of study connected with psychology or pedagogy), this knowledge may have its repercussions in their answers regarding the determinants of talent. Similarly, spending time practicing certain artistic skills may have its repercussions in artists' opinions as to the origin of talent.

Research methodology

The study was carried out on a sample of 465 participants, out of whom 336 were females. The average age was 33.1 (SD=13.7). While 38.3% of the participants were inhabitants of large cities (population between 100 and 500 thousand), 30.2% declared medium-sized cities (population between 10 and 100 thousand) as their places of living; 17% of the participants lived in small towns and villages,

and 14.5% came from very large cities (population exceeding 500 thousand). As for the declared level of education completed, subjects with secondary education prevailed in the sample (50%); this category included many students, who constituted 22% of the sample. The second largest group included people with university education (40.8%), while the two smallest groups were people with vocational and elementary education – 6% and 3.2%, respectively. The group was very diverse in terms of performed and learned occupation, which is demonstrated in Table 1.

Table 1. The research group divided into participants' branches of work or fields of study (referred to as "branch" in the remainder of this paper (N=465))

Branch	Percentage
Science	18.9
Technical specialists	17.8
Psychological	17.8
Humanities	13.4
Aristic	9.1
Pedagogical	7.4
Medical	6.1
Others	9.5

The research was carried out using a classical print version (n=212) and an on-line survey (n=253). The participants who filled in the paper version of the questionnaire were recruited through convenience sampling with help from students-volunteers. A link to the electronic version of the survey, hosted at the website www.ebadania.pl, was posted on internet forums and the facebook.com social networking website.

The study employed a self-developed survey comprised of five open-ended questions concerning participants' beliefs on "talent". This paper analyzes answers to the question concerning the determinants of talent ("What are the determinants of talent? What does talent stem from?"). The content analysis of the results was performed by two judges using the qualitative data analysis software NVivo 9. Basket analysis and correspondence analysis were computed using the STATISTICA PL 12 software. In order to carry out these analyses, the judges performed a simplified categorization; the most frequent categories were chosen and related categories were combined.

Research results

Content analysis was conducted by two competent judges. The subjects’ answers were categorized, which allowed for the identification of 14 categories. While conducting content analysis it needs to be remembered that the subjects were allowed to give answers concerning the origins of talent in several sentences, and some participants did so. Such a possibility entails a number of coded answers which exceeds the number of participants. Some participants included different categories in their answers (e.g., *You need to work on your talent, it needs to be developed, but I also believe that a person should have some innate “predispositions”*). Therefore, the next step was computing a matrix of co-occurring categories (cf., Table 2), which demonstrates the co-occurrence frequency for certain categories in the participants’ answers.

Content analysis (see: Figure 1) revealed that subjects most often described the sources of talent in terms of innate categories (322 answers were assigned to this category). The subjects also specified that talent is related to predispositions (53) in a given area (e.g., *“there are certain innate (often unique) predispositions to doing something”*), which are mostly innate (33 answers linked the categories of “innate” and “predispositions”, cf., Table 2). Some participants emphasized



Figure 1. Determinants of talent according to participants – content analysis

that talent requires work. According to them, innate skills are not enough to fully develop talent, which is a result of developing inborn abilities (e.g., *“it is something inborn, yet it requires developing and polishing”*). Eighty-five answers pointed out that talent is a result of hard work. However, a vast majority (50 answers combined the categories of “work” and “innate”) linked this work with skills already possessed; those skills required work and practice (e.g., *“It is innate, yet it requires a lot of effort and long-lasting work”*). Some answers focused on the importance of the socio-environmental context, which was reflected in the categories of “environment”, “family and parents”, “proper conditions” and “discovery and appearance”. The most frequent category, namely “innate”, was related to the categories of “work”, “development” and “environment”. This indicates a conviction that even inborn predispositions and abilities require further work, often with some socio-environmental help, e.g., from teachers, and favorable circumstances which influence the development of talent. Subjects pointed out that one can discover one’s talent (e.g., *“These are inborn predispositions; however, they often require discovering and nurturing”*). However, few subjects related the discovery of talent with the necessity of further work and development.

The next step in the analysis was grouping the subjects’ answers into three categories: *innate*, *acquired* and *innate and acquired*. The last category comprised answers which highlighted interdependence and interactions between the innate, environmental categories and work. Correspondence analysis was then computed in order to contrast the previously identified categories with the participants’ branches. The analysis was designed to compare beliefs on the nature of talent held by the participants with different occupational backgrounds. For the sake of the analysis, the branches declared by the participants were grouped into six categories, namely: science, humanities, artistic, psychological and pedagogical, technical specialists and others. The “psychological and pedagogical” category was formed due to the prevalence of the participants connected with these disciplines. By virtue of their education and knowledge regarding the gaining of skills and the inheritance of abilities, these participants were expected to differ from others. The idea behind the formulation of the “artistic” category was a willingness to test the common assumption that people who are connected with arts perceive the nature of talent differently.

The computed correspondence analysis revealed a clear link between the participants’ branches and their beliefs on the origin of talent (cf., Figure 1). The participants who were involved in science and technical jobs tended to perceive talent as inborn. The subjects connected with the area of psychology and pedagogy pointed to the interdependence of origins of talent. The category of artist

participants stood out in the study as beliefs on talent being acquired prevailed in this group. In this way, it was possible to reduce the number of variable categories from eight (including five categories for “branch” and three for “origin of talent”) to three: “artistic field – acquired talent”, “science field – innate talent” and “psychological and pedagogical field – innate talent, which requires work”. This separation was based on the identification of two dimensions. The dimension identified in the correspondence analysis explained 98% of the total inertia. Herein inertia is understood analogously to variance, a measure expressing the degree of profiles dispersion around average scaled profiles (Stanisz, 2007). The relationship between both of these variables was statistically significant ($\chi^2=17.24$, $df=8$, $p<0.05$).

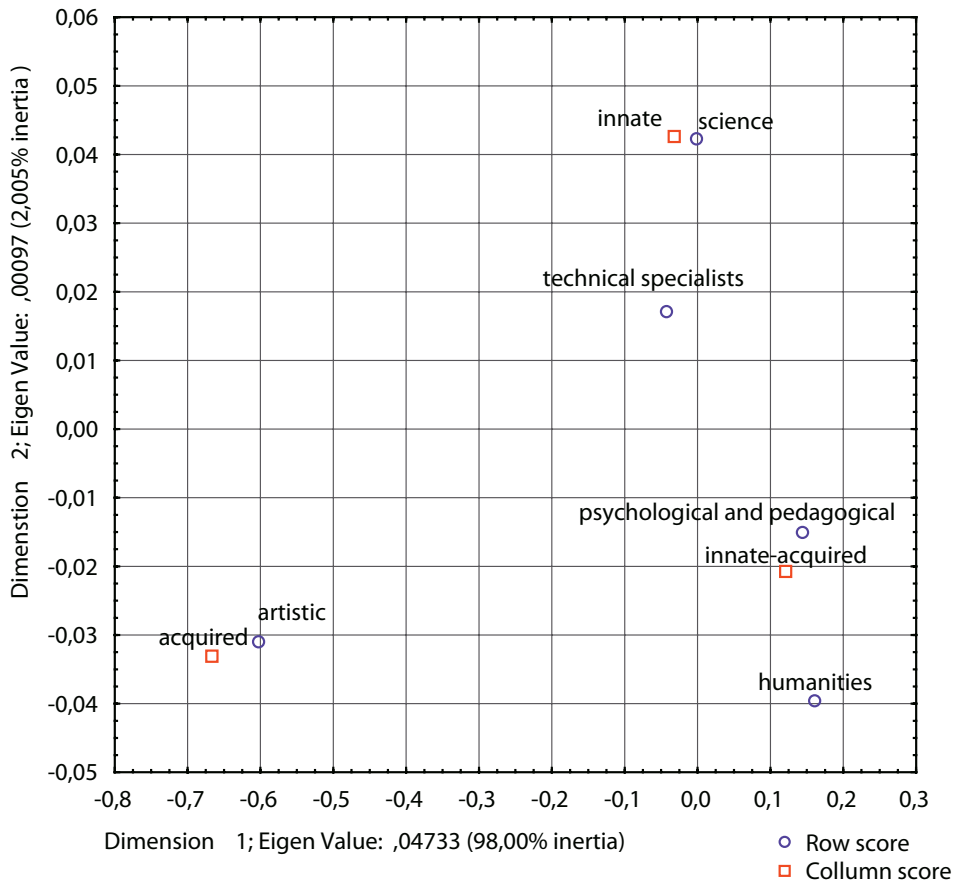


Figure 2. Correspondence analysis for branches and determinants of talent

Table 2. Matrix of co-occurring categories in subjects' answers
(number of answers where the categories co-occurred)

	gift	discovery and appearance	passion	work	predispositions	appropriate conditions	acquired	it simply occurs	family and parents	development	polishing and mastering	environment	practice
discovery and appearance		4											
passion			3										
it simply occurs								9					
predispositions					3	6	13						
family and parents									3				
luck												1	
practice													4
work													
development													
polishing and mastering													
environment													
innate													
	10	28	16	50	33	9	21	5	17	47	16	36	11

The last step was computing market basket analysis for the most frequent categories. Owing to this analysis, it was possible to reveal the subjects' associations based on their utterances. Market basket analysis allows for the identification of associations between subjects' answers through computing relative probabilities of their co-occurrence. The analysis employed the answer categories which had been prevalent in the previously computed content analysis. The confidence index informs how likely a consequent answer is to occur if a certain antecedent answer has been given. Support refers to a probability of both given answers' co-occurrence in a subject. Results of the analysis indicate that talent is a domain-specific skill or ability, which is also innate and requires work, polishing, developing and comes easily (cf., Table 3).

Table 3. Market basket analysis – association rules and probability of their occurrence

Antecedent	Consequent	Support (%)	Confidence (%)
innate/natural	distinctive, outstanding	26.69	38.58
skill	innate/natural	23.00	79.43
skill or giftedness	innate/natural	22.18	76.06
directed (domain-specific)	innate/natural	18.48	76.27
work/practice	innate/natural	15.61	73.79
polishing and mastering	innate/natural	14.78	75.79
easiness	innate/natural	13.35	76.47

Discussion and Conclusions

The results of content analysis and market basket analysis portray talent as a category which stems, to a prevalent extent, from inborn elements. However, those elements require further work and development. According to the subjects, appropriate conditions and environmental support are needed in order to develop talent. The category of “work” occurred independently very rarely. Hence, a belief that talent can be evolved through conscientious and systematic practice was very infrequent. Correspondence analysis showed that the subjects of the artistic branch tended to accept the elements of work and development within the concept of talent to a larger degree. In turn, the psychologists and pedagogues emphasized the aspects of inborn predispositions and abilities as well as hard work and developing the potential already present.

The differences in the perceptions of the determinants of talent which have been identified among the participant groups may serve as a starting point for further analysis in this area. One issue that seems particularly interesting is motivation – do different perceptions of the determinants of talent and special abilities differentiate people in terms of achievement motivation? Are there any differences in terms of modalities in which talent occurs?

Dweck proposes differentiation of two types of *implicit theories* (i.e., ways of understanding such constructs as intelligence or moral character), namely *entity* and *incremental* theories (Dweck, Chiu, & Hong, 1995). These constructs are related to defining characteristics as fixed and malleable, respectively. People who hold perceptions that relate to the entity theory of intelligence chose performance goals, which allow for the assessment of the competences possessed; however, they do not necessarily provide information about development. The abovementioned preference for performance goals is far less frequent among incremental theorists (Dupeyrat & Mariné, 2005; Dweck et al., 1995; Lou & Noels, 2016; Yeager & Dweck, 2012). Entity theorists are also more oriented toward assessing their own behaviors and accomplishments in terms of intellect, while incremental theorists are more likely to embed behaviors in the psychological and behavioral context, one which is regarded as a mediator of traits and behaviors. Incremental theorists, to a large degree, emphasize effort in the pursuit of goals (Blackwell, Trzesniewski, & Dweck, 2007). Consequently, in the face of failure, incremental theorists rarely relate to a lack of abilities; instead, they emphasize situational aspects and the effort which has been expended. Entity theorists, on the other hand, may fall into the trap of helpless reactions and negative affectivity (Dupeyrat & Mariné, 2005; Hong, Dweck, Lin, & Wan, 1999; Lou & Noels, 2016). Perhaps people who hold different implicit theories of talent would also differ in their motivations, goal-setting and assessments of others' actions. The abovementioned possibility appears to be particularly salient in light of research results which demonstrated that implicit theories can be induced (Hong, Dweck, Lin, & Wan, 1999; Lou & Noels, 2016).

To sum up the conclusions stemming from this research, it should be highlighted that individuals regard talent as largely innate, yet, according to the participants, it also requires developing in the course of a gifted individual's life. This belief relies largely on people's knowledge and experience. Having considered the results of this research and the conclusions drawn from research on implicit theories to date, it can be assumed that these beliefs may translate into people's motivation for developing the skills they possess. Another interesting question would be related to a potential influence of beliefs held by teachers, pedagogues and parents on the ways in which they motivate children to develop their predispositions, and how these beliefs are related to children's results and accomplishments.

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