

Highly Talented and “Only” An Apprentice?

(Grundlage eines Referats am internationalen Meeting ‘Youth 2006’ in Glasgow)

Abstract

This paper presents the empirical results from a study of vocational research on the highly gifted pupils. This is an area that, to date, has not been the subject of much empirical investigation. Based on data from a Swiss longitudinal study on the effects of acquiring pre-school knowledge of reading and mathematics, intellectually above-average (gifted) pupils, who are now 16-year-olds, are filtered out and analysed with respect to their educational background and plans for the future. The most striking findings of the analysis are that: (a) those with well above-average ability are to be found in all educational examination standards; (b) their educational careers may be characterised by notable breaks, yet still be highly successful; and (c) a significant number of pupils decide against completing a high-school certificate (A-level equivalent) in favour of vocational training. A limitation on the validity of the results arises in two respects: (a) with regard to the small size of the sample group and (b) in terms of the fact that the link between performance development, cognitive ability and the actual performance demonstrated cannot be ascertained from the available data. Consequently, vocational training must also increasingly recognise the possibility of having to train a potentially significant number of apprentices with above-average abilities in the most varied of domains.

Key Words Giftedness, professional training, choice of profession, promotion of the gifted, school career, Switzerland

Introduction

This article discusses the above-average ability of young people who choose to undertake vocational apprenticeships rather than completing a high-school certificate (A-Level equivalent) through high school education. Justification for a focus of this kind stems from the current position of educational policy in Switzerland:

In June 2003, the Swiss Delegation to the World Championships for the Professions in St. Gallen won 20 medals and thus the first place, ahead of South Korea and Austria. This is a pleasing confirmation that much has been achieved on the Swiss professional-education front. On 20th September 2003, at the "Professional Education Day", Johannes Deiss, member of the upper house of the Swiss parliament, commented that this success would prove to be the initial impetus for future outstanding achievements. In stark contrast to these successes, research into promotion of the gifted in Switzerland is "caught in a trade-off between education and profession" (Manstetten, 1991) and is, as a result, much neglected. Thanks to the new and innovative law on professional education which has been in effect since the 1st January, 2004, this situation may well change over the next few years. Various aspects of this law focus on the promotion of particularly talented young trainees. In commenting on the law, the Swiss parliament also referred to "exploiting the reserves of the talented" in terms of professional education. However, the commonly cited "lay theory", according to which a linkage of the talented with professional education is dismissed as unlikely or lacking credibility, and the resultant desire to relegate such activities only to high schools and universities may prove a considerable barrier. If these two traditional educational forums are considered as the only legitimate ones for promoting the talented, things may be rather less promising than one would hope.

Against this background, an attempt is made in this paper to provide a critical analysis of the subject from the perspective of educational science and with the inclusion of em-

pirical findings on the career selection by above-average talented young people. This will be achieved through a four-phase process. Firstly, the main problems as well as the educational theory and policy issues will be considered in the European context. In a second step, the findings of a Swiss long-term study of school careers of young people who are currently 16 years old (Stamm, 2003), will be analysed. The professional objectives of respondents with above-average cognitive talent profiles, will be presented and analysed. Contrary to the current trend, a group can be identified which does not follow the conventional high school route (in Switzerland, the "Gymnasium" where the "Matura" is awarded), but rather the route into professional training - an apprenticeship. On this basis, a number of different open questions have been formulated. It is intended that these will be further examined throughout the coming years within the framework of a research project focusing on the training procedures of highly-gifted young people undertaking vocational apprenticeships, sponsored by the office for vocational training research of the Swiss Confederation's Innovation Promotion Agency (CTI). Subsequently, a number of suggestions for training requirements pertaining to vocational research of the highly-gifted will be put forward.

The Professional Promotion of Talented People: Theoretical and Education Policy Perspectives

If it is really the case that an increasing number, particularly of talented young people, follow a direct route into professional training, then research findings must be viewed with an open mind, because they refer to an unusual and perhaps unfortunate fact. This is, the professional training sector must also accept that it will be confronted by people with above-average capabilities whose talents are not always visible and cannot readily be exploited. This fact is perhaps disturbing, because it must be assumed that the heterogeneity of learning and training conditions amongst the trainees is larger than previously assumed. Why is it that such findings are disturbing? Why are we so far from assuming the presence of such potential talent in professional training, while on the other hand, we attribute this unquestionably to the "customers" of high schools? Does professional talent have a lower value in our society (Manstetten, 2000)?

In theoretical terms, an initial answer can be found in the hiatus between general and professional education courses of the 19th century, "the teaching canon of the high school (Gymnasium) became the epitome of education" (Manstetten, 1991, p. 6). Subsequently, the classical education theorists such as Georg Kerschensteiner, Eduard Spranger or Theodor Litt, could do nothing to alter the state of affairs, even though they proclaimed professional education as "portal of human education" (Kerschensteiner), a profession as an "opportunity for self actualisation (Litt) or education "beyond the profession and only beyond the profession" (Spranger). Also, the current concept of education is still primarily characterised by a neo-humanistic and idealised notion of education which proclaims the orientation of the Gymnasium towards scientific preparatory courses and the professional schools towards professional preparatory courses (Pflüger, 1991). Accordingly, even at the beginning of the 21st century, giftedness is associated with the successful attendance of a Gymnasium, and promotion of the gifted is accredited to academic-intellectual courses. Consequently, particular gifts are assumed to be present, sought-after and promoted, but not in relatively low-level schools (lower than the Gymnasium) or in professional education.

A further cause of this one-sided academic-intellectual orientation can be assumed to derive from the themes and special framework introduced by Georg Picht in the Sixties (1964), and the resultant proclamation of a German educational catastrophe. His message was that a school system which does not use the potential reserves of the gifted, cannot survive in the face of international competition. As one of his many answers, Heinrich Roth (1969) formulated a dynamic concept of giftedness and combined this with the claim that the core task of promoting the gifted, lies in controlling and increasing cognitive learning capabilities and performance. Subsequently, all efforts focused on intellectual capabilities, so that all others were regarded, at most, as of compensatory significance. Although, over the last few years, this one-sided orientation has been neutralised somewhat by the identification and promotion of exceptional musical, sporting and artistic talent, the question remains whether there exists in an analogous manner, a disposition for business, technical, trade-related or medical-care performance. This particular question seems to fall outside the ambience of societal interest. Therefore, professional giftedness has been primarily excluded from analysis, so that currently, with the exception of the German studies of promoting the gifted in professional education (Manstetten, 1996; Holling et al., 1996; Stein et al., 2003), there are hardly any well-founded answers with respect to the training activities which ought to be promoted. Those who desperately seek an explanation, therefore search, in the first instance, for arguments such as that the three-level school system provides sufficient potential for the promotion of above-average talent and that the Swiss Matura is equivalent to the Gymnasium Matura and is an appropriate means of promotion. Such people may also believe that the success at the professions Championship means that no further efforts are required. However, such arguments do not take into account that, firstly, the formality of a professional Matura is a long way from guaranteeing the desired effect of promoting giftedness. Secondly, young people who are interested in practical professions turn away relatively frequently from a more academic path, despite having sufficient intellectual potential. Thirdly, despite the many gold medals earned by the Swiss, professional championships or Olympiads provide a good, but by no means systematic approach to the promotion of outstanding talent. They have the character of certificates, but are applied too late and too selectively, because not all talented trainees have the same opportunity to participate. What is really necessary is an early identification of professional talent and a systematic promotion, which commences at the beginning of the training, provides offerings at various different levels, and facilitates special challenges as well as modified learning and qualification conditions.

Beyond the above factors, in this context, there is still perhaps the most important and ignored education-policy argument: in the context of the reformulation of Switzerland's university landscape and its integration into the European scene, professional qualifications become of particular importance, not only as feeders for technical colleges, but also as guarantors for discovering professional and practically-oriented reserves and for promoting the professional quality of the new entrants to the skilled labour market. These are the reasons why talent and notions of excellent performance must be rethought and why integration and implementation into the law relating to professional training, is so essential. In an analogous manner to the Swiss "Leitmotiv" of simultaneous equality and differentiation for technical colleges or polytechnics and universities, an *equivalent* high-value strategy for promoting excellent performance must be pursued, so that the presence of potential giftedness in both the academic and professional areas are treated as essential and inevitable. For this reason, the young people must be chal-

lenged and their talents promoted. Nonetheless, the orientation should remain differentiated to retain the distinction between the academic-intellectual university level and a completely practical professional or trade-oriented promotion.

Research Design of the ERM-Longitudinal Study

The long-term study with the title "Early Reading and Early Mathematics as Social Facts? A Longitudinal Study on the Impact of Pre-School Cognitive Competence", commenced in late 1995 with a sample of 396 children just commencing school and their teachers from eight Swiss cantons, and also including Liechtenstein. The study will continue until 2008. The sample comprises an investigation group (N = 185) and a comparison group (N = 181). Pupils were allocated to the investigation group if they commenced school in autumn 1995, six weeks after starting school. The pupils had responded to a standardised test in reading and mathematics and completed it without mistakes. Each of these children was contrasted with a comparative child of the same sex who did not have the same previous knowledge but attended the same class. Currently, the sample contains 366 pupils which represents a drop-out rate of eight per cent. The group comprises 59 early readers (ER), 60 early mathematicians (EM) and 66 who have both talents (ERM). Although the sample is balanced in terms of girls and boys (49 per cent boys, 51 per cent girls), boys are under-represented in the early mathematicians (63 per cent) and the girls with respect to the early readers (66 per cent). In contrast, there is a balance in the composition of ERM's.

The question of which school careers and development processes young people who can already read and do arithmetic when they enter school, should follow, it is at the centre of the project. That is, what is the impact of pre-school reading and arithmetic choice, with respect to school success, on profession and social development? The project is based on a model which assumes congenital (inherent) capabilities. These can be transformed into outstanding performance where there are favourable cognitive and non-cognitive personality attributes as well as favourable environmental factors.

According to this model of giftedness, data were obtained in five investigative iterations: 1995 (school entry); 1996 (middle 1st class); 1998 (middle 3rd class); 2000 (middle 5th class); 2003 (middle 8th class). Data were obtained for the following areas: intellectual competence, creative and social capabilities, performance and motivation, work and learning strategies, exam/test fear, confidence in own success, teaching climate (atmosphere), social integration, educational expectations and educational activities of the parents, school promotion measures, grades in German and mathematics including classroom performance. Levels of intelligence were recorded upon school entry, as well as during the third and fifth classes using CTF 1 and CTF 20 (Weiss/Osterland 1980; Weiss 1987).

Results

The partial sample considered in this paper comprises 99 young people who are currently in their 9th school year and have proven to have an above-average cognitive capability profile. This entails 25 per cent of the total sample. Of these 99 pupils, 79 attend the highest level of school (pro-Gymnasium), 15 attend the medium level and five attend the lowest level. 34 of those attending the (pro)gymnasium indicated that they wish to undertake professional training and not to follow the (traditional) route to a university education through the Matura. The same applied to 14 graduates of the medium-level school, for whom a Gymnasium education would have been achievable, subject to

certain selection criteria. In this manner, our sample currently contains over 53 above-average respondents who will enter into a professional training scheme in summer 2004 or would like to do so. Subsequently, selected results will be discussed relating to three areas: intellectual capabilities and their distribution amongst the various school types, performance processes over time and social origin.

Intellectual Capabilities and Distribution Amongst the School Types

Figure 1 shows the Cognitive Capability Test CFT (Weiss, 1987) results for all 366 respondents. The mean value of the CFT scale is 100 and the standard deviation 50. The CFT yields an extremely good dispersion of 151-154 points. From the first observation, a conspicuously large dispersion in intelligence performance is evident. The frequency of the values lie between 89 and 149 points and accumulate, on the one hand, on average between 100 and 119 points, and on the other hand, in the above-average area, between 120 and 139 points. Measured by the normal distribution of scholastic intelligence, in which 15 per cent of the entire population has an IQ of 120 or more points, the proportion obtained by 32 per cent can be regarded as high. The reason for this skewed distribution is that half of the sample comprises early readers and early mathematicians, who, for the most part, have greater than average intellectual capabilities.

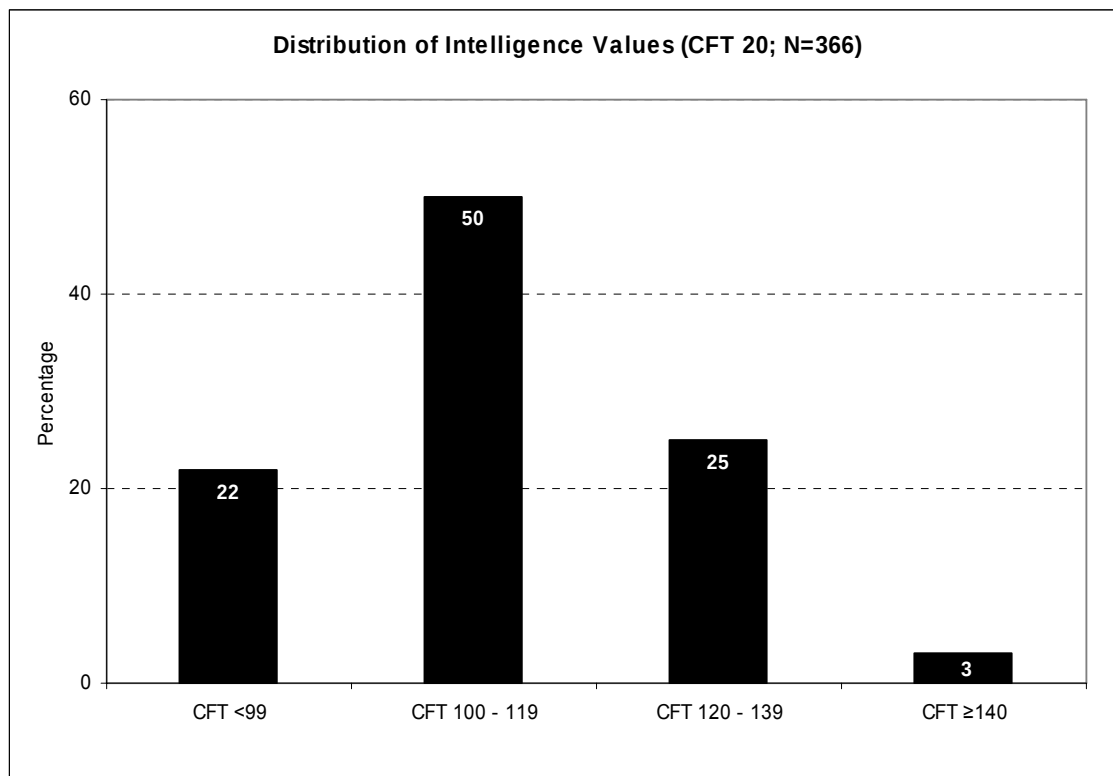


Figure 1: Distribution of Intelligence Values

Figure 2 provides information on the distribution of intelligence values of the 99 respondents with above-average cognitive profiles for the various levels of school. For 92 per cent, the values are located in the range between 120 and 139 points. Eight per cent of the respondents even achieve values over 140, which constitutes approximately three standard deviations and a percentile rank of 99. At the present time, it is interesting to consider how these levels can be allocated to the three school types ('Realschule': low

academic level; secondary school: medium academic level; (Pro)Gymnasium: high academic level). As a rule, one would not expect to find above-average intellectual capabilities in all three levels of school, certainly not only in the moderately above-average range, but also in that of well in excess of the average. This is, therefore, a conspicuous and possibly significant finding. As one would expect, with 73 per cent (120 to 139 points), the Gymnasium was the most strongly represented with 7 per cent (greater than 140 points). However, it is very surprising that the proportions in the Realschule and secondary schools are so high, with a total of 20 per cent (19 per cent yield between 120 and 139 points; one per cent are over 140 points). For the most part, we are dealing with pupils who either have one-sided, predominantly mathematical and natural-science capabilities with a simultaneous weakness in the linguistically-oriented subjects, or those whose outstanding potential is simply not visible or detectable in their scholastic performance. They belong to groups which are generally described in the literature as *underachievers*. This concept is denoted as "performance that is contrary to expectations" and constitutes a reliable component in various studies of highly gifted (Heller et al. 2000; Rost 2000).

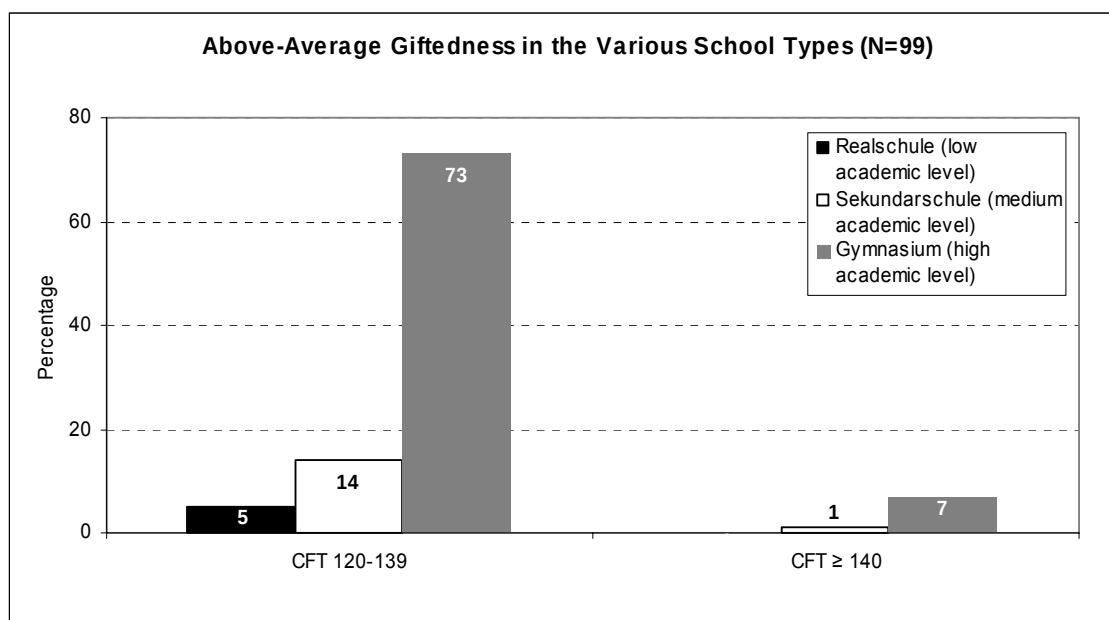


Figure 2: Above-Average Giftedness in the Various School Types

Performance Over Time

The next issue to arise is that of scholastic performance over time by these above-average gifted pupils. Given the allocation depicted in Figure 2, generally linear development paths cannot be assumed for the various school types. Also, the findings from the scientific evaluation studies of professional schools, suggest a very substantial variability in performance (Bals, 1996). Therefore, this question should be answered by means of cluster analysis. The logic is that in a domain of similarity, groups of constructs can be identified which have a maximum internal consistency or interrelatedness and a minimum linkage with other clusters. Using the *Ward method*, initially, the mean values were calculated for variables within the clusters. Subsequently, the quadratic Euclidian distances of the individual cases for each cluster were calculated and subsumed into

mean cluster values. After that, those clusters were combined and, through integration, yielded the lowest possible growth of the total sum of distances. The usual criteria for selecting a particular solution suggested that a four-cluster solution was optimal. The profiles are presented in Figure 3 which makes it clear that two clusters have a balanced profile at a high level and have therefore remained stable, whereas the two other clusters are characterised by significant upwards and downwards mobility. The first cluster (N = 25) comprises young people who had entered school with substantially accelerated previous knowledge, while the second cluster (N = 30) comprises very mediocre students who, however, from the middle of the first class onwards, started performing very well. The performance process of both other clusters were characterised by substantial variation. While, one year before concluding the obligatory period of schooling, Cluster 3 can be included in the mid-range (N = 26), the 4th cluster (N = 17) can be regarded as exhibiting weak performance. The clear divergence between first/second and third/fourth clusters, can thus be interpreted as a visualised legitimisation of the statement that talent is really a predisposition for, but does not necessarily lead to outstanding performance.

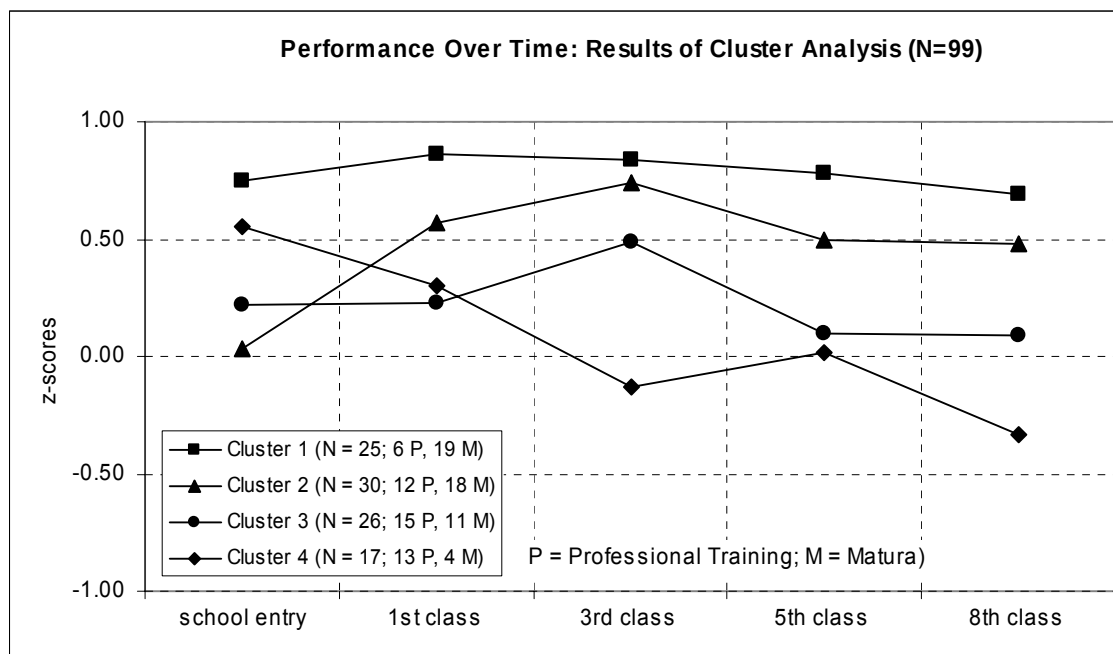


Figure 3: Performance Over Time: Results of Cluster Analysis

For the current investigation, of particular interest for the developmental paths are those young people who wish to enter into a professional training. A look at the composition of the clusters makes it clear that more than half of the professionally-oriented pupils belong to Clusters 3 and 4 which are characterised by lower levels of success and signify inconsistent performance paths. Those who had selected the goal of Matura, yielded consistent and successful educational careers far more frequently. Accordingly, the findings of Bals (1996) were both confirmed and expanded: intellectually above-average pupils who aim at professional education, tend to have problematic, inconsistent educational paths behind them and it must be assumed that a substantial proportion of underachievers enter into professional training.

Social Origin

It has frequently been proven that highly talented young people more often come from families with a high socio-economic status (Albert and Runco, 1986; Terman and Oden, 1959). However, such findings must be seen in context, because they are often influenced by methodological selection problems. The investigations may relate to already identified children and, up to the present, hardly any studies are available which are based on neutral samples uninfluenced by any particular selection process. However, educational research and the newly confirmed results from the PISA study are of considerable importance, because they are empirically reliable (Coradi Vellacot and Wolter, 2001; Köhler, 1992; Deutsches PISA-Konsortium, 2001; Ramseier and Brühwiler, 2003). This research suggests that social origins and school career influence scholastic success on an ongoing basis. Our data confirm this state of affairs in an unexpected manner, because it indicates the substantial influence of social origin on professional goals, *also* with respect to cognitively above-average pupils. Origin-related disparities can be determined not only amongst weak performers or above-average pupils, but also amongst those who are particularly gifted. Of the 99 above-average pupils, 20 per cent have a working-class background, 54 per cent come from middle class and 26 per cent from the so-called upper classes, that is from households where the parents are graduates. Figure 4 depicts the allocation to both targeted professional objectives. While young people from middle class backgrounds channel their professional lives through the university system in approximately equal proportions, the relationship between young people from upper-class background is almost 1:2 (20-39 per cent) in favour of aiming at the Matura. For children from a working-class background, on the other hand, more than 4:1 (26 to 6 per cent) choose in favour of professional training.

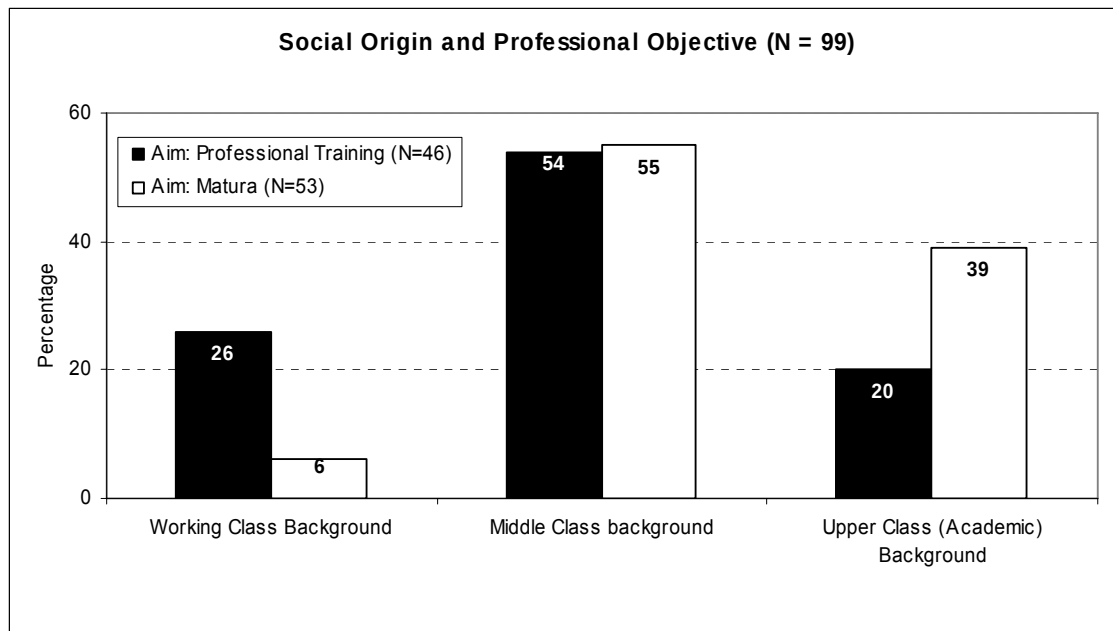


Figure 4: Social Origin and Professional Objective

Consequences

The research results for the 99 people in our ERM study who have outstanding intellectual potential, demonstrate that their school careers proceed in a varied manner and

that by no means all succeed in converting it into appropriate performance. Accordingly, such pupils are to be found at all academic levels of Secondary School I, therefore also in the low and medium academic level, where the only route open to them is into professional training. On the other hand, our data suggest that a new clientele is increasingly finding its way into professional education. This relates to pupils who followed the Gymnasium training route, but decided against the Matura and in favour of professional training. Accordingly, professional training must assume increasingly, that it will have to train a perhaps quite substantial proportion of apprentices, who have above-average capabilities in various domains, but whose profiles are quite varied. This relates to young people who (a) despite good scholastic performance, do not go to university, but prefer a professional training, (b) because of their problematic and unstable educational biography have decided *against* school and *for* "practice", or had to, or (c) as a result of specific capabilities in a particular area, primarily in mathematics, because of linguistic weaknesses, have nonetheless only been able to achieve Realschule or Secondary School level. If, in addition, one takes into account the "normal population" of trainees as well as those at the other end of the scale, it is indisputable that professional education sees itself as confronted with very diverse bases and potential in the various different facets and must therefore accept the reality of large differences in performance, both in theoretical subjects and practical activities.

If one takes our research findings and compares them with the available results from research in Germany, there is a fair amount of confirmation. This includes the discontinuity of performance paths, which, with respect to preferences in the mathematical/natural-science area, together with social origin, work as social filters which are independent of performance. There are no confirmatory results with respect to creativity. Our results indicate only in essence that the results of accompanying scientific research should be extended to cover the extent to which scholarship holders have achieved no greater than average values in the key intelligence tests. The fact that, in our study, a really large proportion of cognitively above-average pupils selected professional education, is an indication supporting the assumption that, apart from apprentices who do not yield high test values, but do reveal outstanding professional performance, trainees with high cognitive profiles are also part of reality. However, whether they will also produce above-average professional performance, remains an open question.

Aside from such deliberations, a problem arises in interpreting the findings in that the link between performance development, cognitive ability and the actual performance demonstrated is difficult to ascertain in a number of aspects. Performance and ability are always embedded within an external system comprising personal/family influences and direct supportive measures offered during schooling, in addition to the effects of the teaching itself, peer groups, or the application of individual learning techniques. The extent to which such correlations affect performance development cannot be ascertained using the currently available data. Consequently, this represents a limitation of the study. A second limitation arises from the small size of the sample group. Thus, in this respect, continued replicating studies need to be developed and the influence of contextual variables also examined. Of particular interest here would be analysis of the actual role played (or that could be played) by teaching with respect to performance development and the extent to which teaching could potentially take on an equalisation role.

These questions should be answered in part within the scope of the above-mentioned project, conceived as a longitudinal study, entitled “Highly gifted, and ‘merely’ a trainee?” Specifically, there are three focuses: (a) the motives and paths which led to particular choices of profession and which have also accompanied the search for training or apprentice positions, (b) the talent profiles (subject-related intellectual, manual capabilities performance motivation) and (c) the contextual and personality-related correlates which facilitate an optimal development of the potential of these young professional people. If, however, one wishes to speak of future vocational research of the highly gifted in Switzerland, then supporting studies are required. In this respect, for example, knowledge enabling the specific identification of young persons of above-average ability within individual vocational fields is practically non-existent. The same applies with respect to the subject of ‘vocational talent and gender’, as well as the question regarding the extent to which highly-gifted individuals from other social groups can be supported in realising their performance potential. Such data would provide an indispensable and substantial contribution towards ensuring that vocational research of the highly-gifted becomes a fundamental element of both overall research into the highly-gifted, as well as vocational pedagogy.

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