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Gifted Education in German-Speaking Europe

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Abstract

The authors first briefly describe how the concepts of talents and giftedness found in German-speaking Europe have evolved in the school system and in general over the past two centuries, and how the variety of gifted-education efforts found within and beyond schools as well as counseling efforts attest to these changes. They then discuss four hallmarks of gifted education in German-speaking Europe: (a) the ongoing development of gifted promotion methods through the integration of newer insights about learning and social aspects; (b) the development of new methods of gifted education, particularly in the areas of mentoring, self-regulated learning, and hybrid approaches; (c) a decidedly scientific approach, which is increasingly characterized by systemic perspectives; and (d) the results of research on the effectiveness of various approaches to gifted education in German-speaking Europe.

Keywords

giftedness, counseling and guidance, effective teachers of the gifted, evidence-based practice, gifted education

Notions and Concepts of Talents and Giftedness

Educational Developments

In the widest sense, notions of talents and giftedness in German-speaking Europe can be traced back to medieval sources (Ziegler & Stoeger, 2007). More directly applicable to commonly held contemporary views of talents and giftedness in the education sector are developments in German-speaking secondary education going back to the late

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18th century. Starting in Prussia in 1788, a series of reforms led to the establishment of a system of college-preparatory secondary schools, so-called *Gymnasien* (singular: *Gymnasium*) throughout German-speaking regions (Bruning, 2005). The Greek term recalled the antique Greek concept of the *gymnásion* as it was understood by 18th-century German thinkers: as a training facility in ancient Greece for boys for sports and to a certain extent also for intellectual pursuits (Trautwein & Neumann, 2008). Thus, in an idealistic or programmatic sense, these secondary schools were marketed as learning institutions specifically designed for excellence and talent development with sports-like rigor. Such *Gymnasien* did not, however, offer training in athletic disciplines. A select few young males were to master a predefined set of intellectual pursuits through rigorous practice akin to the way Greek athletes were imagined to have practiced competitive sports disciplines (and some learning activities) in classical antiquity.

The establishment of the *Gymnasium* was not based simply on late-18th-century German enthusiasm for antique Greek culture, however. It was also politically motivated. Starting with Prussia, German states began to regulate university access, which had been hitherto "largely unregulated" (authors' translation of Trautwein & Neumann, 2008, pp. 469-470), by making the secondary degrees offered by *Gymnasien* the prerequisite for university study. *Gymnasien* are still the main gatekeepers of university access throughout German-speaking Europe.[1] This is an essential developmental milestone for German-speaking educational systems in general as well as for widespread German views of excellence and talent development, because it reflects a state-regulated claim of interest in an explicit connection between academic excellence and a meritocracy.

It is important to stress that the development of the *Gymnasium* did not actually create a meritocracy—A child's family's socioeconomic status (SES) has an influence on his or her chances of attending a *Gymnasium* (Ehmke, Hohensee, Heidemeier, & Prenzel, 2004). The *Gymnasium* tradition has nevertheless provided the impetus for widely held notions of academic excellence and even giftedness that exist to this day throughout German-speaking Europe (Trautwein & Neumann, 2008). The image of the *Gymnasium* as the "gold standard" (translation of Trautwein & Neumann, 2008, p. 467) of German-speaking secondary education is aligned with the continuing *Gymnasium* focus on intellectual abstraction and general, liberal arts knowledge (Trautwein & Neumann, 2008). Thus, the *Gymnasium* sits at the top of what has been aptly termed the *nativistic giftedness typology* (translation of Baumert, Cortina, & Leschinsky, 2008, p. 57) upon which secondary education continues to be based in most parts of German-speaking Europe. The view remains common that *Gymnasien* fulfill the function of magnet-style schooling for the intellectually gifted (Trautwein & Neumann, 2008), because such schools are ostensibly charged with educating only those children who demonstrate the highest levels of scholastic achievement during the first 4 years of their schooling.

In recent years, however, college-preparatory schools (which is how we will generally refer to *Gymnasien* in this article) have greatly expanded enrollments.[2] With around one third of pupils completing college-preparatory secondary schooling in

German-speaking regions, the 19th-century view of passively equating the *Gymnasium* with a type of gifted education has become anachronistic. The past 15 years have witnessed rapid, fundamental, and far-reaching changes in the attitudes held and approaches taken to the topic of giftedness by schools, researchers, and ministries of education in German-speaking countries. Although the roots of these changes reach back into the 1980s and earlier (e.g., Bundesministerium für Unterricht, Kunst und Kultur, 2006; Furck, 1963/1967; Grossenbacher, 2011; Ziegler & Stoeger, 2007), the fact remains that German-speaking school systems seldom recognized—much less dealt with—giftedness in an explicit sense within schools prior to the mid-1990s (Fels, 1999). Once we have provided information on current popular views of giftedness and talent, we will return to these recent developments in gifted education and describe how they now manifest themselves inside and beyond schools.

General Views of Giftedness and Talent

As the widespread embracing of explicitly formulated concepts of gifted education has been a very recent development in the history of German-speaking societies, it comes as no surprise that antiquated outlooks on talent and giftedness are still the norm in society in general.

An examination of the way the German word for giftedness, *Begabung*, is used in the largest German-language reference corpus of written German, the *Deutsches Referenzkorpus* (Kupietz, Belica, Keibel, & Witt, 2010), provides evidence for this circumstance. The German Reference Corpus consists of a 3.5-billion-word sample of German-language publications, covering the period predominately since 1990 and representative of German from Germany, Austria, and the German-speaking parts of Switzerland. Not counting compound word forms, the word *Begabung* (giftedness) appears 11,590 times in this corpus. Of all of the words that occur directly before *Begabung*, 310 such co-occurrences have a log-likelihood ratio (LLR) above 0, which means that for these 310 word pairs, the frequency of their co-occurrence exceeds the statistical likelihood that they would coincidentally appear next to one another based on the overall size of the corpus as well as on the number of occurrences of each term in that corpus (Perkuhn & Belica, 2004). Among these 310 collocations, the six content-word combinations with the highest LLR scores all refer to concepts of giftedness that reflect a liberal arts, nonutilitarian view of giftedness: *künstlerische Begabung* (artistic giftedness) is the most statistically significant co-occurrence with *Begabung* as the second word, with a LLR score of 5,289. This means that this combination occurs 5,289 times as often as it "should" from the standpoint of simple mathematical odds (based on the frequency of each term within the corpus). The five next most statistically remarkable collocations in this list from the German Reference Corpus are *musikalische Begabung* (musical giftedness) with a LLR of 4,341; *besondere Begabung* (special giftedness) with a LLR of 3,462; *zeichnerische Begabung* (giftedness for drawing) with a LLR of 1,368; *außergewöhnliche Begabung* (exceptional giftedness) with a LLR of 1,365; and *musische Begabung* (giftedness for fine and performing arts) with a LLR 1,195.

An examination in the same database according to the same parameters of the German term *Talent* (talent) suggests that Germans tend to think of talent most frequently in terms of liberal, fine, and performing arts. Not counting compound word forms, the German word *Talent* appears 70,331 times in the German Reference Corpus. The five most statistically remarkable two-word collocations with *Talent* are *großes Talent* (great talent) with a LLR of 25,902; *schauspielerisches Talent* (histrionic talent) with a LLR of 21,322; *musikalisches Talent* (musical talent) with a LLR of 15,185; *komödiantisches Talent* (comedic talent) with a LLR of 12,281; and *künstlerisches Talent* (artistic talent) with a LLR of 7,573 LLR.

These tendencies do not hold, however, for the German word *Hochbegabung*. The term, which is also typically translated as "giftedness," was introduced in 1963 by the gifted-education researcher Franz Mönks (Ziegler, 2008) and has since become the term of preference in German giftedness research for denoting giftedness. An examination of the term *Hochbegabung* in the same database according to the same parameters confirms the term's specific usage tradition. As a highly specialized term, *Hochbegabung* only appears 1,458 times in the same corpus (not counting compound word forms). This lower frequency of occurrence means that statistical observations on the word's typical usage have a larger margin of error. Nevertheless, the five collocations with the highest LLRs appear to confirm that the term *Hochbegabung* does indeed typically refer to intellectual and academic giftedness concepts.

Scientific Approaches to Giftedness

German-speaking Europe is characterized by lively scholarly discourse on theories about exceptional accomplishments. Positions run the gamut from markedly traditional views equating giftedness with a high IQ (cf. Rost, 2009) to expertise approaches that downplay talents and gifts and stress learning and promotional efforts (cf. Gruber & Ziegler, 1996). Most researchers adhere to one of the following positions.

Giftedness researchers spent a long time working on a *multi-causal moderator model* (e.g., Heller, Perleth, & Lim, 2005) that differentiates between gifts in a literal sense, on one hand, and the manifestations of these gifts—accomplishments and performances—that come into existence over the course of ontogeny, on the other hand. Various factors are identified as moderator variables, and these are divided into internal and external moderators. The most important internal moderators are motivation, learning strategies, concentration, and motor skills. The most important external moderators are home environment, school, and peers.

Interest in *systemic theories of giftedness* has increased considerably in recent years (Stoeger, Aljughaiman, & Harder, 2012; Ziegler, 2005; cf. the special issue *Begabungsförderung aus einer systemischen Perspektive* [Gifted education from a systemic point of view] edited by Stoeger & Ziegler, 2009). Systemic theories of giftedness expand the target of gifted education to include the individual and various aspects of his or her environment, as the actiotope approach illustrates: "An actiotope includes an individual and the material, social, and informational environment with which that individual actively interacts" (Ziegler, Vialle, & Wimmer, 2013). The actiotope model

postulates a variety of systemic interactions. Of central importance is the concept of the coevolution of an individual's actiotope components (action repertoire, subjective action space, goals, and environment) that occurs as an individual proceeds down a path to excellence in a given talent domain. A sign of increasing institutional recognition of the systemic approach to giftedness is the recent decision of the Austrian Center for Gifted Education and for Giftedness Research (Österreichisches Zentrum für Begabtenförderung und Begabungsforschung [ÖZBF]) to discontinue its efforts in the area of individual gifted education to focus its resources on improving systemic factors of gifted education (Weilguny & Rosner, 2012).

Gifted Education and Promotion

Roughly 100 years ago, the German psychologist William Stern not only made his fundamental contributions to intelligence diagnostics, but he also "called for the establishment of academic counseling centers for the gifted in all school districts [to ensure] identification and counseling of the gifted [and to provide] supplementary training [for teachers] in the field of giftedness" (Ziegler & Stoeger, 2007, pp. 79-80). The pioneering work done by Stern and others in Germany came to an abrupt halt when Adolf Hitler and the National Socialists came to power in Germany in 1933 (Feger, 1991): The anti-intellectual outlook and jingoist–racist ideology of the party precluded genuinely progressive reform throughout the education sector. With only a few exceptions, education policy after the Second World War was strictly nonelitist and egalitarian (Fels, 1999), and negative attitudes regarding gifted education in schools were widespread in German-speaking Europe (Fels, 1999; Grossenbacher & Huber, 2007). As documented in the previous section, gifted education only started to reestablish itself in German-speaking countries during the 1980s and 1990s. Today, after only a few decades, these regions offer a wide variety of approaches to defining, identifying, and encouraging giftedness.

We will now provide a brief overview of these efforts as currently found in German-speaking regions within and beyond the framework of schooling as well as in the specific context of counseling-based efforts.

Approaches to Giftedness in K–12 Education

A description of how German-speaking schools currently approach giftedness needs to reflect awareness of the administrative heterogeneity of the regions connected by their shared language. Germany comprises 16 different school systems. Austria's school system is federally regulated, but the funding and execution of actual giftedness support measures are state-level matters that each of Austria's nine states deals with independently (Rosner et al., 2008). Switzerland has 26 canton-level school systems (a majority of which are fully or partially German-speaking). The semi-autonomous Italian state of South Tirol, the Grand Duchy of Luxembourg,[3] and the Principality of Liechtenstein each have independent school systems. These states currently have a combined German-speaking population of about 100 million inhabitants. Somewhat

similar educational systems, a high level of institutional communication and cooperation among German-speaking countries in the area of education and education research, and a shared spoken and written language nevertheless justify the joint consideration of how the schools in these regions deal with giftedness.

The remainder of this section provides an *exemplary* overview of the types of giftedness-related measures mandated by governing bodies and implemented by schools as well as by organizations involved in teacher training in Austria,[4] Germany,[5] Liechtenstein,[6] Luxembourg,[7] South Tirol,[8] and Switzerland.[9] The sources used in this section, which are a sample of an enormous amount of available material, tend to present information reported directly or indirectly by state and federal ministries of education.

Policy aspects. The heterogeneity of school regulations throughout German-speaking countries makes a concise and even summary of whether and how all laws and regulations regarding schooling-related matters address giftedness and gifted pupils difficult. The regulations also reflect differing conceptual views of giftedness and gifted education. In general, an increasing number of governments have added explicit or indirect references to giftedness to the laws and regulations governing their school systems. Most Austrian, German, and Swiss state and federal regulatory bodies have recently recognized the necessity of gifted support and education within the framework of regular school instruction. Although Luxembourg's school legislation did not, as of 2002, mention gifted pupils, recent school reforms speak of schools being responsible for discovering and developing pupils' "talent" (Ministère de l'Éducation Nationale et de la Formation Professionelle, 2012). South Tirol's educational policy mentions giftedness explicitly and stresses the importance of promoting giftedness without recourse to separative measures.

All countries use different kinds of acceleration and enrichment strategies. Most states also have magnet schools and gifted classes in regular schools and consider aspects of giftedness in teacher training and counseling. We will give a short overview of some of these measures.

Acceleration. All German states allow some form of early school entry. Between 1995 and 2008, the percentage of children who were granted early access to first grade rose from 2.5% to 5.4%, after having peaked in 2004 at 9.1% (Weishaupt et al., 2010). Austria allows early school entry; since 2006, gifted children are allowed to start school as of the age of 5 1/2 years. All Swiss cantons, Liechtenstein, Luxembourg, and South Tirol have provisions for or allow early school entry.

With varying restrictions and provisions, all German states allow some form of grade skipping, although, as of 2004, only 3 of 16 states (Brandenburg, Lower Saxony, and Schleswig-Holstein) had programs that actively sought out gifted pupils and informed their parents; the other states had systems that relied on the personal initiative of individual parents or teachers.

As of 2004, five German states were offering or testing various methods of allowing groups of students to progress more quickly than normal through secondary education. Swiss cantons and South Tirol have programs that allow groups of pupils to

advance more quickly through selected subjects. Some school systems in Germany, Austria, and Switzerland have established partnerships with universities that allow gifted pupils to begin university work while still in school and apply earned university credits toward the completion of a postsecondary university degree program.

Enrichment. Enrichment programs that are conducted in cooperation with schools but remain outside the scope of pupils' everyday school experiences (e.g., irregular or occasional day trips to universities, annual talent competitions, summer academies) are ubiquitous within German-speaking school systems. In-school enrichment offerings include special clubs for gifted pupils (in most German states and in Austria), special studios for artistic or creative work, facilities for self-regulated learning, additional and advanced instructional offerings during and beyond the hours of normal school instruction (throughout Germany, Austria, Switzerland, Luxembourg, and South Tirol), and school leadership programs in areas such as student relations, teaching, and tutoring (e.g., in Hamburg and in Austria). Liechtenstein has general provisions that allow and encourage schools to develop their own enrichment offerings. In Austria, the 1998 revision of the interpretation of the federal law regulating reasons for which pupils may be excused from instruction has encouraged the development of new enrichment opportunities that take gifted students out of their schools during regular instruction.

Four aspects of giftedness enrichment appear underrepresented in the descriptions provided by German-speaking school administrations. First, despite ample evidence of the high levels of effectiveness at encouraging gifted pupils achieved by certain types of mentoring programs (Stoeger & Ziegler, 2012), information on the implementation of mentoring strategies within scholastic enrichment efforts aimed at gifted students in German-speaking countries has been scarce (Rosner et al., 2008). This has very recently started to change for the better, however. South Tirol's giftedness and gifted-education policy, which stresses mentoring along with enrichment, provides an encouraging example. Second, a paradoxical situation exists with regard to gender-aware and minority-focused gifted support and education. For Germany, recent Trends in International Mathematics and Science Study (TIMSS) data indicate that "hardly any other country has test results showing such a strong performance deficit for girls in the natural sciences" (authors' translation of Weishaupt et al., 2010, p. 88)—despite the generally better overall performance of girls in the German school system (Weishaupt et al., 2010). It is well known that the participation and enthusiasm of girls in science, technology, engineering, and mathematics (STEM) subjects in Germany continues to be negatively affected by still-prevalent gender-role stereotypes (Quaiser-Pohl & Endepohls-Ulpe, 2010). Despite this clearly inequitable situation, gifted-education offerings aimed specifically at girls are still rather the exception. There is also little evidence of giftedness measures designed for other marginalized groups such as individuals with nonlocal or low-SES backgrounds (Schüller, Lenitz-Zeitler, Samhaber, & Weilguny, 2010; Weilguny, Resch, Samhaber, & Hartel, 2013). Third, many German-speaking regions educate pupils with disabilities in special needs schools. The fundamental problems of identifying and helping gifted pupils with disabilities in school

systems that separate disabled children are documented (Fels, 1999). Nevertheless, the aforementioned sources reporting on gifted-education efforts say very little about efforts focused on pupils with disabilities. Fourth, although this appears to be changing, a similarly disproportionate amount of evidence exists for efforts focused on Level 0 in the International Standard Classification of Education (ISCED-0), that is, on preschoolers, and early ISCED-1 education (e.g., Rosner et al., 2008).

Magnet schools and classes. Schools whose admissions policies stress a particular curricular aspect, talent domain, or type of intellectual achievement often provide their pupils with acceleration and enrichment in a given area. Although certain types of magnet schools such as subject-specific college-preparatory secondary schools with a special focus on, for instance, music have a long tradition in German-speaking Europe (Trautwein & Neumann, 2008), magnet schools for intellectually gifted students were, until recently, unusual. As college-preparatory secondary education has expanded, so have special schools and classes for intellectually gifted children. As of 2004, almost all German states either had or were planning public or private university-preparatory schools with a special focus on intellectually gifted pupils. In Germany and Austria, schools with a more or less generalist profile have started founding gifted-education programs with enrichment and acceleration opportunities for a portion of their respective student bodies. In Austria, the question of how schools that seek to develop a special profile in the area of gifted education might best be evaluated and rated has been debated, and preliminary standards have been developed (Friedl, 2010; Huber et al., 2006). To date, these criteria do not appear to have been implemented by the government. Austrian vocational schools have also begun to redefine themselves as a certain brand of magnet school (Schüller et al., 2010). Schools in Luxembourg are allowed to individually develop special programs for groups of gifted pupils.

Separation versus inclusion. Although they do not offer data to support their claim, the observation made by Rosner et al. (2008) that, for Austria, a majority of gifted-education programs are based on separation should be kept in mind. The overview of enrichment offerings reported by German states in Holling, Preckel, Vock, and Schulze Willbrenning's (2004) report also suggests a preponderance of separation-based approaches in Germany. Austrian school policy stresses that although inclusive and separative approaches can both potentially offer effective means of encouraging giftedness, the support of gifted pupils within nonspecialized schools is the more important option in that it can help prevent an overall decline in achievement in schools. Education policy in Liechtenstein describes inclusive and separation-based strategies; it also stipulates, however, that educators should develop integrative enrichment offerings instead of measures involving separation wherever possible. In Switzerland, Grossenbacher (2011) offered a markedly egalitarian view of the fundamental nature of giftedness support and enrichment: "Giftedness development without the formation of an elite class through instructional development and school-wide as well as interscholastic cooperation" (authors' translation of p. 23). Inasmuch as Grossenbacher's

view is representative of the 21 cantons that belong to the Swiss Network of Gifted Education, it suggests a clear preference for inclusive approaches to gifted education.

Teacher training. Most German states claim to address giftedness in university teacher training and during in-service training. German and Austrian states as well as Swiss cantons have also produced informational material about gifted education designed for use in their respective teacher-training systems. In Austria, some teacher-training institutions have recently adopted the curriculum recommendations regarding giftedness as formulated by the Austrian Center for Gifted Education and Research (Weilguny et al., 2013). In 2006, all Austrian states reported offering some sort of in-service teacher training in the area of giftedness identification and gifted education, and some German and Austrian states offered at least one certificate program based on the guidelines set by the European Council for High Ability. As of 2006, Austria was tied with Hungary as one of the two European countries with the highest number of teachers (in absolute numbers and with respect to their combined population) who had completed some form of in-service gifted-education training. One group consisting of nine Swiss cantons and Liechtenstein jointly developed a set of standards for giftedness curricula in teacher training in 2002 (Brunner, Gyseler, & Lienhard, 2002). Many gifted-education specialists working in Switzerland have completed a training program in Switzerland that was certified by the European Council for High Ability. This training program has now been superseded by certificate and master's programs in integrative giftedness and gifted education, which are offered by teachers' colleges in the intercanton region of Central Switzerland and by the universities of applied sciences in the region of Northwestern Switzerland. South Tirol offers its teachers in-service training and a certificate program in giftedness and gifted education. In sum, German-speaking teachers have access to a growing number of certificate and advanced-degree programs (Hany et al., 2010).

Giftedness Promotion Outside of Schools

Scholastic giftedness initiatives are complemented by the offerings of nonprofit and commercial institutions as well as by universities, some of which cooperate closely with schools. Traditional forms of giftedness promotion[10] are becoming less common or are being modernized. Because of space constraints, we will present only a few examples of such offerings.

Traditional approaches. There is a long tradition of providing gifted school and college students with scholarships in German-speaking regions. A list recently published online by the German Federal Ministry of Education and Research shows the variety of such offerings for university students, for instance (Bundesministerium für Bildung und Forschung, 2013). Such gifted-education promotion taking place outside of schools is particularly important for pupils whose low SES may reduce their access to certain educational resources (Ziegler & Stoeger, 2011). This sort of gifted promotion is inherently problematic, however, as it fails to offer focused learning assistance in many cases. Merit-based financial support has been frequently ineffective at

promoting talent development (cf. Ziegler, 2008). This realization has led many of the institutions in German-speaking Europe traditionally active in supporting talent development to invest more of their resources in content-oriented measures of learning assistance (e.g., training in the area of learning strategies or self-regulated learning).

Other approaches traditionally taken in German-speaking Europe to promote giftedness outside of schools include national and international Olympiads and other competitions in various subjects (Oswald, Hanisch, & Hager, 2005). Although such competitions used to be more focused on the final product (often a performance of sorts) and thus had more of a show or performance character, more recently they have begun to stress other aspects. Increasingly, such competitions are designed more like workshops. Participants do not simply meet to compete against one another. Such events now frequently involve phases of individual preparation in close proximity and learning in groups and teams (Wagner & Neber, 2007).

Summer camps and summer schools designed for gifted children are also starting to set new priorities. These programs are beginning to focus on the development of certain learning abilities or skills. This narrowing of focus reflects a better understanding of the fact that short-term promotional measures need to be followed by phases of stabilization during which newly learned skills are consciously integrated into the routines of everyday life (Hany & Grosch, 2007). The stabilization of new skills is only likely to succeed when participants possess effective learning skills and enjoy the support of an effective social network. It thus comes as no surprise that summer camps and summer schools have increased the amount of attention paid to coordinating and improving the social aspects of their offerings.

University–school partnerships are now another mainstay of gifted education in German-speaking regions and have continued to expand their scope in recent years. In the German state of Bavaria, for instance, the Ministry of Education and Cultural Affairs established a "University Day" program for gifted students in 2011. Participating 11th- and 12th-grade students spend 1 school day per week attending university courses and lectures. In addition to their enrichment benefits, the experiences such programs offer participants help students to learn more about options for university study and careers.

In summary, traditional giftedness-promotion efforts found outside of schools are in a transitional phase in German-speaking countries. These changes involve a new focus on learning skills and on the development of learning-friendly social networks.

New approaches. Giftedness-promotion offerings found outside of school are becoming more receptive to the insights of giftedness research. To illustrate this development, we will provide general information about extracurricular giftedness-promotion offerings in German-speaking Europe and describe two particular projects that together demonstrate the breadth and depth of such new approaches.

Studies indicate that those who achieve excellence almost always have a history of working with a mentor (Grassinger, Porath, & Ziegler, 2010). This observation has led to the establishment of numerous mentoring programs in Germany (for an overview, cf. Ziegler & Stoeger, 2012). A prominent example of such programs is CyberMentor,

an e-mentoring program that facilitates mentoring relationships for high-achieving girls in the area of STEM. The program brings girls between the ages of 12 and 18 together with individual mentors who are women either studying a STEM subject or working in a STEM field. Each mentee–mentor dyad interacts for at least 1 year via email, online through chatting and forums, and during offline meetings. No less than 800 girls and 800 STEM-educated women from across Germany participate in the program annually. To ensure that the program works well, mentors participate in training courses and mentees take part in STEM workshops. The effectiveness of the mentoring program is being longitudinally examined (Stoeger, Ziegler, et al., 2012). Data are being collected on various variables (e.g., STEM interest, academic performance in STEM, knowledge about STEM careers and courses of study, confidence in one's own abilities) at three points in time for each cohort of participants (before, during, and after the mentoring year) via questionnaires. Furthermore, participants' online activity and their actual elective behavior (e.g., the choices that participants make about classes and university study) are being investigated. To determine whether positive changes in attitude and behavior are actually results of participation in the CyberMentor Program, the development of participating girls is being compared with that of various control groups including a placebo group.

The achievement of excellence in a given talent domain typically requires a minimum of roughly 10,000 hr of deliberate practice (Ericsson, 2006). As this amount of time makes clear, even under the best of circumstances, a mentor cannot be constantly present during a mentee's development toward excellence in a given domain. This realization has led to a considerable amount of program development in the area of self-regulated learning in German-speaking Europe. Extant programs are numerous and represent a wide variety of approaches (Stoeger & Sontag, 2012). The design and implementation of most programs also adhere to scientific standards. There is, furthermore, a growing consensus among researchers that simplistic program evaluations are no longer acceptable. Program evaluations are increasingly paying attention to long-term effects as opposed to short-term training improvements. The evaluations also frequently include control groups and, whenever possible, placebo groups.

Along with programs focusing on mentoring and the development of self-regulated learning skills, hybrid approaches to the development of giftedness qualify as an area of truly new development within nonschool-based giftedness promotion in German-speaking Europe. Such hybrid programs reflect the insight that any given development from giftedness to highly accomplished performance reflects a highly complex process resulting from myriad influences. Accordingly, hybrid programs seek to offer participants a battery of well-coordinated measures of promotion. One of the leading programs of this kind is the Hector Seminar, which promotes gifted pupils in secondary education in mathematics, information technology, and the natural sciences (Heller, 2009). The program offers participants three types of support. First, subject-specific support to help participants develop domain-specific knowledge and skills in the STEM subjects. Although many other traditional programs of extracurricular giftedness promotion offer help only in this area, the Hector Seminar is a holistic hybrid program that transcends this traditional limit by also presenting participants with

another type of support. This second type is a host of opportunities for combining knowledge and skills development with other aspects of excellence development: mentoring opportunities, enrichment activities, concrete opportunities for acceleration, activities designed to increase interest and motivation (e.g., attributional retraining), learning competency development, and instruction on the improvement of epistemological beliefs. Third, the Hector Seminar works to effect positive changes in pupils' traditional learning environments by reaching out to participants' teachers and offering them additional training in the area of gifted education.

Giftedness Counseling

Giftedness counseling comprises another pillar of giftedness education and promotion throughout German-speaking Europe. Two groups of clients typically seek this sort of professional advice: First, children and their parents seek advice on how to promote the development of a child's abilities and skills, on how to overcome obstacles impeding learning progress, or on choosing the best gifted-education options. The second group of clients consists of private institutions, schools, and governments that are looking for up-to-date, scientifically proven concepts for realizing successful gifted-education programs, especially with regard to making policy decisions about access restrictions as well as curriculum, methods, and personnel training. This greater demand for advice reflects increasing public awareness and acceptance of giftedness as well as a deeper understanding of giftedness and gifted education. Giftedness is no longer seen as a guarantee for good performance. Instead, a dynamic perspective on gifted education and talent development that considers multiple factors of influence on an individual's learning career has gained public support. This more complex, dynamic perspective on giftedness thus emphasizes the importance of ensuring successful learning processes.

When working with the two groups of clients mentioned above and with this sort of conception of giftedness, the challenge for counselors is to consider the manifold personal and environmental influences on the development of an individual's skills and abilities and the complex interplay of these factors. Of the numerous private, state, and university-based giftedness counseling centers found throughout German-speaking Europe, most centers provide *individual counseling* for the first group of clients. A new and fundamentally different approach is that of *systemic counseling* established to serve the second group. Instead of counseling individuals, systemic counseling offices plan, advocate, and help implement changes at the institutional level. The development of systemic counseling reflects a dramatic increase in political openness to education reform in German-speaking Europe since these countries' educational systems opened up to international evaluation in the 1990s.

Systemic counseling. Throughout German-speaking Europe, international school studies such as the Programme for International Student Assessment (PISA) led to demands that education systems be optimized in general and that giftedness education be permanently and explicitly entrenched within school systems in particular. This has, in turn,

led to the establishment of state-mandated or state-supported offices and consortiums responsible for the coordination of efforts between governments, researchers, and schools. Working at the crossroads of all of the major education stakeholders, such offices reflect a fundamentally systemic approach in their efforts at effecting changes among these various parties that can ensure the development of a comprehensive system of gifted education and promotion (Weilguny & Rosner, 2012). Such a system is characterized by an adequate supply of individual counseling opportunities for children, teenagers, and young adults as well as for their parents; teacher training in the area of giftedness education; the development of promotional strategies for individual schools and for entire regions; and participation in governmental policy development.

An example of such an office is the aforementioned ÖZBF, the Austrian Center for Gifted Education and Research, which was founded in 1999 (Weilguny & Rosner, 2012). The ÖZBF coordinates the efforts of specialists from various fields to effectively combine the wide variety of existing support offerings. The individual offerings are found in areas such as elementary and secondary education, teacher training at Austrian teachers' colleges, universities, and increasingly in business and industry. In bringing existing efforts and initiatives together, the office emphasizes networking and cooperative development.

Individual counseling. Individual counseling supports clients in finding solutions to their individual problems and in their long-term development in a talent domain. As each individual counseling relationship varies in nature, effective counseling strategies need to be highly flexible.

Giftedness counseling offices located at various universities have developed theoretically sound counseling strategies designed to ensure high-quality professional giftedness counseling. As various theories of giftedness exist side by side, the chosen theoretical approaches vary considerably from office to office. Thanks to a recent review of gifted counseling concepts currently in use in German-speaking regions (Ziegler, Grassinger, & Harder, 2012), we now have a better understanding of the differences between and the developmental trends in such counseling offices.

Most counseling centers still focus on personality traits and work with multifactorial models of giftedness (i.e., models that assume that more than one personality trait contributes to giftedness). Some models used in counseling efforts also consider environmental factors but do not explicitly specify interaction mechanisms (Schneider-Maessen & Mönks, 2012). Mönks and Katzko's (2005) interdependence model, for instance, defines giftedness as the triad of high levels of intelligence, creativity, and task commitment embedded in the middle of an individual's social environment. Their model does not, however, specify interactions between an individual and his or her environment, and it does not specify interactions within each of these. A majority of the models currently being used does, however, consider interaction mechanisms. Most common are interactionist models such as the moderators model by Heller et al. (2005) or Sternberg's (1999) "intelligence as developing expertise" model. These models stress factors (moderators) that influence a successful development of giftedness and thus focus on the conditions during learning processes (e.g., Fischer,

Fischer-Ontrup, & Liebert-Cop, 2012; Lehwald, 2012; Perleth, Joswig, & Hoese, 2012). Over the past few years, however, systemic counseling approaches, which are highly interactionist and holistic (assuming bidirectional interactions between all personal and environmental factors as well as within each), have become increasingly common (Stoeger & Ziegler, 2009).

The identification strategies used by counseling offices also reflect various approaches. Typically, the goal of diagnostic efforts is the identification of gifted individuals and/or their "gift" so that they may be directed toward an appropriate and propitious learning environment. In some cases, however, identification efforts focus on a particularly promising developmental process. A counselor might recommend that a certain interaction within an individual's family environment or within the larger social framework be expanded (Amri, Zech, & Zimmermann, 2012), or a counselor might suggest the employment of a certain diagnostic strategy aimed at identifying learning skills that are necessary for an effective development in a particular talent domain (Fischer et al., 2012). The holistic process approach to identification developed by Ziegler, Grassinger, Stoeger, and Harder (2012) allows for the construction of an individual learning path toward excellence in a talent domain and is applied in various counseling centers.

The variety of giftedness approaches is also reflected by differing counseling methods. All in all, research on current counseling methods describes a highly eclectic situation: Various ideas and approaches garnered from myriad therapy traditions have found their way into giftedness counseling offices between Hamburg and Vienna (Ziegler, Grassinger, & Harder, 2012). Methods reflecting learning theory and systemic ideas such as resource orientation, consideration of various learning environments, or a focus on learning behavior are becoming increasingly common.

In sum, German-language giftedness counseling is widespread and expanding, yet also very heterogeneous in nature. Counseling concepts are, however, more frequently starting to recognize modern giftedness models and holistic views.

Giftedness Research

In German-speaking Europe, research has been conducted on the adequacy of theoretical concepts of giftedness and counseling, on identification methods, on interventions and their evaluations, and on teacher-training programs and their evaluation. Researchers have also studied basic research questions as they pertain to the motivational, personality, clinical, and neuropsychological aspects of gifted students as well as to their developmental trajectories and learning behavior (Preckel, Gräf, Lanig, & Valerius, 2008). The following paragraphs outline some of the most important studies and their significance for gifted education.

To date, two internationally renowned longitudinal studies of gifted pupils have been carried out in Germany: the Marburg Giftedness Project (Rost, 2000) and the Munich Study of Giftedness (Heller, 2001). Starting in 1987, the Marburg Giftedness Project first assessed pupils who were in third grade and then monitored their development over the course of 6 years. Within its longitudinal research program, the Marburg

Giftedness Project also compared two groups of high school students who were attending regular classes: a sample of gifted high school students (with an IQ greater than 125) and a sample of high school students with average IQs. The study focused on students' cognitive and academic achievements as well as their psychosocial well-being. One aim was to assess the correctness of still-prevalent negative stereotypes about giftedness as a risk factor for development. Study results indicated that both samples of high school students included high performers. Surprisingly, only 15% of high performers were gifted (i.e., had an IQ greater than 125). The study also found that 15% of the gifted students were underachievers. These findings thus questioned the widespread notion that intelligence and school performance go hand in hand and raised fundamental doubts about the basic definition of giftedness common in German research and education at that time. The study's findings regarding psychosocial variables were also remarkable, because they contributed to a destigmatization of gifted students: Contradicting widespread German views of academically gifted pupils at the time, such students tended to be socially well integrated, psychologically stable, and self-confident (Rost, 2000).

The Munich Study of Giftedness (Heller, 2001) evaluated the gifted classes in schools in the German state of Baden-Württemberg over a 10-year period. These classes included acceleration (curriculum compressing) and enrichment elements. Gifted students completed the then-mandatory 9 years of college-preparatory secondary education (Grades 5–13) in 8 years. In contrast to Rost's approach in the Marburg Giftedness Project, the Munich Study of Giftedness selected its participants after Grade 4 according to a multidimensional model of giftedness (Heller et al., 2005). Students who were identified as gifted attended the special classes described above during Grades 5 to 10. Then they skipped 11th grade and entered classes with regular students during Grades 12 and 13 to prepare for the comprehensive exams with which their secondary schooling concluded. Control groups were acquired from schools that did not offer the condensed curriculum classes. The evaluation focused on the development of academic and test performance and selected personality characteristics of the students as well as on classroom climate, teaching style, and instructional specifics. Results showed that students in the gifted classes typically developed positively in all analyzed areas. Differences in cognitive abilities and performance observed during 4th grade (favoring the students of the gifted classes) continued to increase over the rest of their schooling. By the end of the tracked instruction (after10th grade), classroom management and teaching style did not differ between the two types of classes according to students' assessments. But in the gifted group, individual teacher support was more closely associated with motivation and performance (Reimann & Heller, 2004). The Munich Study of Giftedness also investigated the question of the influence of IQ on performance. Researchers found that the strength of the influence of IQ on performance decreased over the years: During Grades 5 to 7, IQ was the strongest predictor of performance; in Grades 7 to 9, noncognitive personality factors contributed significantly to performance; and during Grades 9 to 13, none of the variables predicted performance (Perleth & Sierwald, 2001). Follow-up studies showed, furthermore, that the predictive strength of IQ for academic performance continued to

decline after secondary schooling. IQ was particularly ineffective at predicting the performance of participants in their final university examinations. Instead, other factors such as students' interests and the availability of learning opportunities and peers with the same interests proved to be stronger predictors (Perleth, 2001).

As the findings of the Munich Study of Giftedness were quite convincing in many respects (Heller, 2001), most schools in German-speaking Europe reacted by reducing the total amount of time allotted for completing college-preparatory secondary education from 9 to 8 years. As this change applied to all students in this form of secondary education, it accordingly led to a need for new acceleration measures for gifted pupils, who, at the time, were still typically being defined as those pupils possessing an IQ greater than or equal to 120 or 130. In many cases, classes for gifted students were introduced within college-preparatory secondary schools.

In 2008, a new longitudinal study was initiated by the German states of Bavaria and Baden-Württemberg to evaluate the classes for gifted students offered by schools located throughout both states. The study, which was titled PULSS (Projekt für die Untersuchung des Lernens in der Sekundarstufe [Project for the Study of Learning in Secondary Education]), followed cohorts of pupils at eight schools from fifth through seventh grade (Schneider, Stumpf, Preckel, & Ziegler, 2012). PULSS examined how gifted students' academic performance developed as well as noncognitive and environmental variables. The results showed that students enrolled in gifted classes performed better academically and often needed less time to achieve certain curriculum milestones compared with students from regular classes in the same schools. The study showed, furthermore, that those gifted pupils who attended gifted classes did better than comparably gifted pupils who remained in regular classes. No substantial differences in noncognitive variables were found. Regarding environmental factors, the gifted classes provided a better social climate for gifted children than the regular classes; gifted pupils participating in gifted classes reported decreasing levels of aversion toward school compared with the levels they had indicated for their primary-school experiences. Other studies corroborate the PULSS findings suggesting that, for Germany, gifted classes are beneficial for gifted pupils' perceptions of their learning environments. One study noted positive effects of gifted classes on the gifted students' levels of disruptive classroom behavior (Proescholdt, Stumpf, & Schneider, 2011). Another study documented improving attitudes toward learning and school as well as increasing learning motivation and achievement (Stumpf & Schneider, 2009). Study results have, however, also pointed out a number of risks. In particular, the transition into a gifted classroom is more likely to lead to a decline in academic self-concept for girls (Preckel & Brüll, 2008).

Besides evaluating separative measures of gifted education, researchers have also examined inclusive gifted-education measures in German-speaking schools. Findings exist on preschool interventions (Bergs-Winkels, Prinz, & Winkels, 2012; Nolte, 2012; Urban, 1997), early gifted education in primary school (Joswig, 2000, 2002), integrative gifted education in regular classrooms (Henze et al., 2002; Henze et al., 2006), gifted education in classrooms with children with disabilities (Bless & Klaghofer, 1991), gifted education in multiage classrooms (Busch & Reinhart, 2006a, 2006b), and

investigations on early placement at university (Endepohls-Ulpe, 2012; Stumpf, 2011; Stumpf & Schneider, 2008). These researchers have paid particularly close attention to options for promoting effective learning behavior. In particular, a substantial body of research conducted in German-speaking Europe exists on self-regulated learning. Examining various self-regulated learning interventions, researchers have looked at the general effectiveness of the interventions as well as their effectiveness for gifted achievers and gifted underachievers in particular (Stoeger & Ziegler, 2008, 2010, 2011).

Researchers working in German-speaking countries have also evaluated a large variety of extracurricular enrichment programs, some of which are coordinated with scholastic offerings and some of which function independently of schooling. Two thorough studies in this area are Heller's (2009) 8-year longitudinal evaluation of the Hector Seminar and the evaluation of the 7-year CyberMentor Program (Stoeger, Ziegler, et al., 2012), both of which we described above. Evaluations of both interventions showed various positive effects for participants such as increased levels of self-confidence, creativity, and STEM activities outside of the interventions as well as higher participation rates and elective intentions for STEM and improved achievements. For the Hector Seminar, differential effects have also been investigated. Results suggest that girls profited more from enrichment offerings in terms of transferring their STEM knowledge to school and into better grades in STEM subjects.

In addition to these evaluation studies, various other research questions on giftedness in German-speaking Europe have been examined. Researchers looked, for instance, at the implicit personality theories of giftedness held by students (Ziegler & Stoeger, 2010b) and teachers (Baudson & Preckel, 2013), and various aspects of the identification of giftedness have been tested (Endepohls-Ulpe & Ruf, 2005; Hany, 2001). One area of giftedness identification research that has received considerable attention in Germany despite a lack of international attention is the connection between fine motor skills and gifted (under-)achievement. Findings of research conducted in Germany indicate that fine motor skills have an incrementally predictive value for math achievement beyond the predictive contribution of cognitive abilities (Ziegler & Stoeger, 2010a). Furthermore, differences between gifted achievers and underachievers could be explained best by fine motor skills and their interaction with concentration (Stoeger & Ziegler, 2013; Stoeger, Ziegler, & Martzog, 2008). Fine motor skills had a significant influence on the results in IQ tests and therefore on the identification of giftedness (Ziegler & Stoeger, 2010a). These findings could lead to useful identification and intervention methods and may therefore be of importance for other cultures as well.

Future Challenges for Giftedness Research and Education

Gifted education in Germany, Austria, Switzerland, South Tirol, the Grand Duchy of Luxembourg, and the Principality of Liechtenstein has been open to existing international traditions. It has also brought forth new ideas and welcomed new directions from other parts of the world (cf. Heller & Ziegler, 2007). As in many other regions around the world, German-speaking Europe continues to work on improving gifted education on several fronts:

- making gifted education an important and regular part of regular teacher training at universities;
- creating networks of politicians, parent-teacher associations, giftedness advocates, and researchers; and
- establishing and expanding a network of specialized giftedness education offerings, in particular of giftedness-promotion centers.

As our remarks on gifted education and promotion and on giftedness research have illustrated, perhaps the single most important challenge currently faced by those involved in gifted education in German-speaking Europe is continuing to modernize the goal structure and methods toolbox within gifted education.

The 1990s witnessed a crisis of confidence within gifted education. Lipsey and Wilson's (1993) meta-analysis of the average effect sizes of the most common methods of gifted education led to a turning point in the field of gifted education: As they were typically being administered, acceleration and enrichment measures were not even remotely capable of supporting talented students' development of their full potential. The average effect sizes ranged from minimal to, at best, moderate, and once the authors accounted for publication bias and placebo effects, the already low returns fell almost to the point of insignificance. The study helped effect a move toward more effective types of giftedness promotion. Individual learning processes and systemic aspects became more important. This international development along with the larger system-wide changes in German-speaking secondary education described above have created a new status quo in German-speaking gifted education with at least three new long-term developmental goals for the practice of gifted education there:

- the establishment of mentoring systems in which mentors, as competent learning companions, help bring about improvements in the learning practices of gifted individuals and in their learning environments;
- the improvement of self-regulated learning skills to help compensate for the fact that gifted individuals will always have only limited access to mentors; and
- the development of a systemic approach to giftedness education that informs the nature and—importantly—the concerted use of gifted individuals' social, cultural, infrastructural, and didactic capital (Ziegler & Baker, 2012).

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1. In most state-level educational systems in Germany, Austria, Switzerland, Luxembourg, and Liechtenstein, pupils are tracked into various types of vocational or college-preparatory (usually called *Gymnasium*) secondary education in fifth (the most common start of secondary education in Germany and Austria), sixth, or seventh grade. In South Tirol, students are tracked into vocational or college-preparatory schooling in ninth grade.
2. In Germany, for instance, only 1% of pupils completed college-preparatory secondary education around 1900 (Trautwein & Neumann, 2008). By 1930, this figure had risen to 3% (Trautwein & Neumann, 2008). As of 2010, more than 30% of pupils were completing college-preparatory education in Germany (Weishaupt et al., 2010).
3. Luxembourg has three official languages: Luxembourgish, which is closely related to German, German, and French. Early primary school instruction occurs in German; secondary instruction occurs predominately in French.
4. Unless otherwise stated, data on gifted education in Austria are based on Bundesministerium für Unterricht, Kunst und Kultur (2006).
5. Unless otherwise stated, data for Germany are based on Holling, Preckel, Vock, and Schulze Willbrenning (2004).
6. Unless otherwise stated, data for Liechtenstein are based on "Bericht und Antrag der Regierung" (2008).
7. Unless otherwise stated, data for Luxembourg are based on Mönks, Peters, and Pflüger (2003) and Ministère de l'Éducation nationale et de la Formation professionelle (2012).
8. Data for South Tirol are based on Doblander and Salchner (2008) and Landesgesetz (2000).
9. Only those 21 fully or partially German-speaking Swiss cantons are considered that belong to the Swiss intercanton contact group for issues pertaining to gifted education in Swiss schools known as the "Netzwerk Begabungsförderung" (Network of Gifted Education; see www.begabungsfoerderung.ch). Data for Switzerland are based on Grossenbacher (2011) and Grossenbacher and Huber (2007).
10. We write of *giftedness promotion* in reference to the German terms *Begabungsförderung* and *Begabtenförderung* (more literally, the promotion or encouragement of individuals' giftedness or of gifted individuals). Writers use the German terms to refer to a variety of approaches taken to help individuals find and develop various domain-specific gifts and talents in academic and nonacademic areas, and the terms can refer to enrichment and acceleration.

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