

Rethinking Multipotentiality Among the Intellectually Gifted: A Critical Review and Recommendations

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Abstract

This paper critically reviews the concept of multipotentiality as it has been defined and encountered in the scientific literature on gifted children. Until recently, it has not been adequately subjected to empirical evaluation. Despite its ubiquitous presence in the literature, several pieces of evidence are presented suggesting that multipotentiality has been erroneously interpreted and falsely assumed to apply to a majority of intellectually gifted individuals. Findings are summarized from a recent report (Achter, Lubinski, & Benbow, 1996) on the ability, interest, and value profiles of over 1000 students from the Study of Mathematically Precocious Youth (SMPY), as well as evidence compiled from other empirical studies, indicating that above-level assessment of abilities and preferences among gifted adolescents reveal markedly differentiated profiles for the vast majority (over 95% when all factors were consulted). Thus, the concept of multipotentiality requires rethinking. Traditional assessment tools found in vocational psychology (i.e., questionnaires and tests measuring abilities, interests, and values), when offered in an above-level format, are useful in serving the educational and career counseling needs of intellectually gifted young adolescents. Further, such tools are helpful for gaining an appreciation of the diversity of individual differences among the intellectually talented.

The concept of multipotentiality is one of the most pervasive themes in the literature on education and career counseling for gifted persons (Enmet & Minor, 1993; Kerr & Claiborn, 1991; Silverman, 1993; Rysiew, Shore, & Carson, 1994). Many authors have considered multipotentiality to be the number one concern of gifted students in career decision-making (Fredrickson, 1979, 1986; Jepsen, 1979; Kerr, 1981; Kerr & Ghrist-Priebe, 1988; Marshall, 1981;

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Sanborn, 1979a, 1979b), affecting most gifted students. Yet, despite its ubiquitous presence in writings and discussions about gifted and talented students, empirical support for its

Putting Research to Use

Professionals and parents alike have long known that gifted students pose a unique set of challenges to educators and career counselors. Perhaps the most widely discussed problem facing gifted students in the career decision-making literature is multipotentiality—the notion that talented and gifted students can be “anything they want to be”, due to their above average abilities and interests across multiple domains.

Reviewing previous and more recent research relevant to multipotentiality produces an interesting conclusion. The authors find little empirical support for the supposition that multipotentiality is a pandemic concern among the gifted. In fact, fewer than 5% of gifted adolescents are likely to have intractable concerns with multipotentiality when comprehensive, systematic, above-level assessments of abilities and preferences are used, conjointly, to uncover important individual differences within this special population. This finding underscores the need for counselors, educators, and parents to revisit the utility of traditional vocational assessment tools. Although the intellectually talented are uniform in their capacity to learn many academic topics at an accelerated rate, they nevertheless manifest a diversity of predispositions, strengths, and *relative* weakness, as well as likes and loves, for contrasting subject matter. Many available tools for helping gifted students understand their abilities and preferences are underappreciated. These above-level instruments would be helpful for maximizing achievement, competence, and fulfillment among the gifted by tailoring learning opportunities toward their unique complements of preferences and talents.

These findings should come as good news to counselors and educators working with intellectually talented populations. Intellectually talented students vary widely in the intensity and pattern of their capacities and motives, as well as other behavioral dimensions. As well, we appear to have more valid tools for capturing the unique and salient features of their individuality than many people initially thought.

prevalence among the gifted is lacking. Indeed, assumptions about its significance have gone virtually unchallenged in the gifted literature (Achter, Lubinski, & Benbow, 1996). The purpose of the present paper is to review existing literature related to multipotentiality among the gifted with particular emphasis on the empirical evidence for its pervasiveness. Our treatment culminates in a discussion of the verisimilitude of multipotentiality and attendant implications for educational and career counseling with intellectually talented students.

Overview of Multipotentiality in the Literature

Several published articles report clinical impressions concerning the unique challenges faced by gifted students in educational and career decision-making. In discussing career decision-making and career education for gifted adolescents, Marshall (1981) identified two types of gifted students, early-emergers and multi-talented. Early-emergers are believed to be those, possibly at the highest levels of ability (Kerr & Colangelo, 1988; Marshall, 1981; Silverman, 1993), who exhibit intense, early interest in a particular career path. The second group, the multi-talented, are perhaps most evident at more moderate levels of high ability (Kerr & Colangelo, 1988), and are typically marked by their consideration of multiple options and later than normal career decision-making. Silverman (1993) and Milne (1979) concurred that career decision-making seems to occur either earlier or later for the gifted than for their general cohort, and that the multi-talented or multipotential profile is most common among gifted students.

According to a recent review of multipotentiality (Rysiew et al., 1994), the most widely cited definition emerged from research conducted at the Research and Guidance Laboratory for Superior Students at the University of Wisconsin-Madison. Fredrickson and Rothney (1972) defined a multipotential person as "any individual who, when provided with appropriate environments, can select and develop any number of competencies to a high level" (p. vii). Rothney (1972) and Sanborn (1979a, 1979b) framed the concept more operationally when they asserted that multipotentiality is present in students who earn uniformly high scores across ability and achievement tests and exhibit multiple interests at equal intensities on interest inventories. Given such "high-flat" ability and interest profiles, multipotentiality is believed to lead to the problem of multiple and competing career options at comparable intensities (Fredrickson, 1979; Kerr & Ghrist-Priebe, 1988). Moreover, because of high-flat performance on these measures, traditional vocational assessment instruments are considered virtually useless in discriminative planning with multipotential populations (Kerr & Claiborn, 1991; Kerr & Erb, 1991; Kerr & Ghrist-Priebe, 1988).

When faced with a multitude of talents and interests, choosing among numerous potential careers is presumably very difficult for gifted students (Kerr & Ghrist-Priebe,

1988). It is believed that some of these "multipotential" students may commit to a career too quickly in order to reduce dissonance caused by a vast array of competing options (Perrone & Van Den Heuvel, 1981). Other multipotential students may have a career choice externally imposed upon them from others' perceptions of appropriate fields for gifted students (Delisle & Squires, 1989; Silverman, 1993). Still others may simply become engrossed in a single subject area at a very early age and waver little from this choice, deliberately closing doors to many unexplored possibilities (Marshall, 1981; Silverman, 1993).

While any of these avenues seem plausible for a student with superior abilities and varied interests, the multipotential profile is believed most often to lead to difficulties in narrowing choices and, as a consequence, to possibly delaying important decisions. Combined with the well intentioned message "you can be anything you want to be," frequently communicated to gifted students (Kerr, 1981; Kerr & Ghrist-Priebe, 1988; Kerr & Erb, 1991; Tyler, 1992), and encouragement to leave many career options open into the college years (Delisle & Squires, 1989; Fredrickson, 1979, 1986; Herr & Watanabe, 1979; Howley, 1989; Kerr & Ghrist-Priebe, 1988; Perrone, 1986; Schroer & Dorn, 1986; Silverman, 1993), problems with multipotentiality are believed to leave many gifted students without focus.

Early in this century, vocational psychologist E. G. Williamson (1939) recognized the unique counseling needs of exceptional students when he wrote, "genius does not always find its own way" (p. 387). This condition is believed to be intensified in those who are multipotential. As many writing about multipotentiality have cautioned, it is a mistake to assume that, because multipotential students are intellectually gifted, they will succeed on their own (Fredrickson, 1986) or they will select a career path early and work steadily toward accomplishing their goals (Schroer & Dorn, 1986). To the contrary, multipotential gifted students may be more likely to flounder in a sea of possibilities, equally able and interested in a number of them, and perhaps fearful of committing to a "wrong" choice or concerned that committing to one area is ignoring their potential in several other areas (Marshall, 1981), and thus delaying the decision. These students may wander aimlessly through a multitude of options and eventually fall into a career almost haphazardly, following confusion, frustration, and lack of guidance through the decision-making process (Kerr, 1981; Marshall, 1981).

Lack of Empirical Support for Multipotentiality

The above exposition is typical of the treatment multipotentiality has received in the gifted literature: Multipotentiality (operationalized as the presence of high-flat ability and interest profiles among the gifted) is a pervasive problem among gifted students that results in difficult and often delayed decision-making. Rysiew et al. (1994) asserted that the term multipotentiality has gained

such widespread use that it has become roughly synonymous with the phrase gifted and talented. Despite this, little empirical data exist either to substantiate the pervasiveness of multipotentiality among the gifted (Achter et al., 1996) or to confirm that it leads to delayed or especially difficult decision-making (Hall & Kelly, 1995). This circumstance led Rysiew et al. (1994) to conclude, "not only is it unclear what exactly multipotentiality is, it is also unclear how often it occurs in different populations and what are its consequences" (p. 42).

Indeed, support for the notion of multipotentiality seems to rest primarily on unsystematic anecdotal evidence. Commonly purported areas of support come from reports of straight A students (Kerr, 1981; Kerr & Erb, 1991), students who score highly across all domains of standardized achievement tests (Fredrickson, 1979; Sanborn, 1979a, 1979b), and students with a variety of equally intense interests. In terms of ability and achievement, Rothney and Sanborn (1966) reported that ninth grade students at their career laboratory for superior students quite commonly clustered around the 95th percentile on most standardized tests. In regard to interests, guidance personnel apparently often see "high-flat" interest profiles for gifted students (Fredrickson, 1979; Kerr & Ghrist-Priebe, 1988).

In our literature review, however, we failed to find a study that systematically measured abilities and interests in a gifted sample in order to precisely quantify the prevalence of multipotentiality. The closest approximation came from Rothney (1972), who reported the standardized ability test scores of 11 students chosen as representative of the highest-scorers among 2600 gifted students involved with the Research and Guidance Laboratory for Superior Students at the University of Wisconsin. He presented standard scores across standardized ability tests for each student to illustrate the low measure of variation across tests. Unfortunately, no analyses were conducted on larger portions of the sample and no statistical analysis of dispersion (variability) across tests was conducted. Rothney only reported that all scores were above the 95th percentile on national norms, not taking into account the possibility, commonly encountered when testing intellectually gifted persons, that ceiling effects of the tests might have reduced the amount of observed variation in students' assessed abilities. Gifted students typically display marked intraindividual ability/preference profiles when developmentally appropriate instruments are used. Thus, Rothney's rough analysis makes likely the possibility that existing variation among students in his sample was not found due to inadequate assessment.

Much of the Rothney (1972) chapter was devoted to anecdotal reports—about academic achievements, non-academic accomplishments, and participation in leadership and extracurricular activities—put forth as evidence for the longitudinal stability of multipotentiality. Based on his

research and experience, Rothney concluded that "multipotentiality, rather than the opposite, is most descriptive of those who have been commonly described as gifted" (p. 89). Based on his own definition of multipotentiality and the limited data published in his chapter, however, this conclusion seems unwarranted.

The multipotentiality concept has become well ingrained despite the lack of any empirically convincing scientific underpinning. Essentially theory and research have turned the focus away from demonstrating the prevalence of multipotentiality among the gifted and toward finding interventions to overcome the decision-making problems associated with its manifestation.

Values Interventions

One recommendation has been to focus counseling interventions on the personal values of multipotential individuals (Colangelo & Zaffrann, 1979; Kerr & Erb, 1991; Kerr & Ghrist-Priebe, 1988; Miller, 1981; Perrone, 1986; Perrone & Van Den Heuvel, 1981). The focus on values has been suggested in lieu of interests and abilities—the two variables used most often in traditional educational and vocational counseling (e.g., Dawis & Lofquist, 1984; Holland, 1985; Williamson, 1965)—because for gifted students affected by multipotentiality, it is argued, interest and ability profiles are not differentiated enough to assist in discriminative planning (Kerr & Claiborn, 1991). Personal values, on the other hand, may provide clearer direction toward finding successful and satisfying career paths.

Barbara Kerr and her colleagues have been interested enough in this supposition to put it to an empirical test, by examining the effects of a value-based intervention on the development of personal identity and vocational purpose in "multipotential" college students. Participants were considered multipotential by virtue of their inclusion in an honors program and by having GPAs ≥ 3.5 (Kerr & Erb, 1991). The two-part study by Kerr and Erb involved recruiting college honors students to participate in a three-session career counseling intervention intended to help multipotential students make career decisions based primarily on their personal values.

Using established measures of personal identity and academic/vocational purpose, Kerr and Erb (1991) used a quasi-experimental design to compare a group receiving the values-based counseling intervention to a same-ability wait-list control group. The results of a two-part study provided equivocal support for the efficacy of a value-based intervention with multipotential students. Similar changes in educational and vocational decision-making occurred for both the counseling and wait-list groups, but a significant difference between the two groups on a measure of personal identity highlighted the efficacy of the values-based intervention on a non-vocational level, that is, in increasing the general sense of identity in honors students. Therefore, while the value based intervention proved useful at an important personal level (i.e., enhancing personal

identity), its effects were not shown to apply specifically to students' vocational decision-making, nor, more particularly, to address issues unique to students with multipotentiality.

Two aspects of Kerr and Erb's (1991) study cast doubt on their assumption that study participants were multipotential. First, the authors assumed that the honors students in their sample were affected by multipotentiality based on their high GPAs. Because they did not measure students' abilities or interests, however, we do not know how many of these students actually had high-flat ability and interest profiles. Kerr and Erb further assumed that, because of their supposed multipotentiality, students would lack a sense of vocational identity and purpose. This second assumption proved unfounded, however, as the pretest means for the honors students on both variables—vocational purpose and personal identity—were higher than those of the norm groups used to standardize the scales. These two unsubstantiated assumptions call into question the presumed pervasiveness of multipotentiality in a population with a significant proportion of gifted students (college honors students), as well as the impression that multipotential students have more difficulty making educational and career decisions.¹

The Kerr and Erb (1991) paper represents one of the few, if not the only, published empirical evaluation of an intervention predicated on multipotentiality. As the above indicates, the efficacy of their intervention in assisting multipotential students with educational or vocational decision-making is questionable, and many participants may not have been accurately diagnosed as multipotential in the first place. Given these results, and the lack of empirical evidence for the pervasiveness of multipotentiality, it would seem fruitful to step back and examine what has been established by existing research about ability and interest patterns among the gifted.

Research on Abilities, Interests, and Choices of College Major

At least three distinct lines of empirical evidence lead to questioning the validity of conflating giftedness with multipotentiality: studies analyzing patterns of abilities, inter-

¹We should note that some other methodological limitations compromise this study as a test of an intervention for multipotentiality among the gifted. First, the use of an honors student sample likely included many students who would not meet conventional criteria for selecting intellectually gifted participants (i.e., scores in the highest percentiles on standardized ability tests). Second, honors students self-selected for participation in the study based on interest in receiving career counseling. Thus, assignment to treatment and control groups was not random, and the similarity or dissimilarity between the treatment and no-treatment groups is unknown. Finally, while a values focus was emphasized during counseling, other common career counseling interventions also were used to strengthen the effect of treatment, making it a less than pure values-only intervention. A study designed to address some of these methodological concerns might produce different results.

ests, and the college major choices that gifted students make.

Abilities. We have long known that above-level ability testing can differentiate abilities among the highly gifted. Widespread use of such above-level testing began in the early 1970s with the work of Julian C. Stanley at Johns Hopkins University and his Study of Mathematically Precocious Youth (SMPY; Keating & Stanley, 1972; Stanley, 1977). Through the talent search model originated by SMPY, over 150,000 gifted adolescents (ages 12-14), selected by scoring in the top 1-3% on conventional achievement tests, yearly take the Scholastic Assessment Test (SAT) or the American College Tests (ACT) (Benbow, 1991), tests designed for college-bound high school juniors and seniors, to differentiate levels of ability in both math and verbal domains.²

The rationale for conducting such above-level testing is simple. Gifted students in great numbers reach the ceiling, or top, on standard grade-level achievement tests—indeed such test scores are often primary criteria used to identify giftedness (Feldhusen & Jarwan, 1993). Hitting the ceiling on a battery of standardized grade-level achievement tests communicates that these students have mastered the basic skills deemed appropriate for their current grade placement, or slightly above their current grade placement, but it does not give an adequate assessment of their abilities and knowledge level for their most exceptional competencies (Stanley & Benbow, 1986). Instead, grade-level testing of gifted students often creates the false appearance of equal abilities across domains. In order to more adequately assess the level of various abilities in this group of students (in the same way grade-level achievement tests do for the majority of students), tests designed for higher ability levels must be used.

By raising the ceiling of difficulty, above-level testing has the benefit of spreading out the high ability students and distinguishing the able from the *exceptionally* able (cf. Hollingworth, 1926, 1942). Such testing also gives individual gifted students, their teachers, and their parents a clearer picture of students' exceptional strengths and relative weaknesses—something unappraisable from high-flat, age- or grade-calibrated assessment tools. Information about differentiated abilities among the gifted, obtained

²More recently, advances in the study of human abilities (e.g., Carroll, 1993; Lubinski & Dawis, 1992; Snow & Lohman, 1989) have emphasized that, in addition to math and verbal abilities, spatial/mechanical abilities constitute a third important domain in the makeup of general intelligence. Historically, spatial/mechanical abilities have been under-assessed, but constitute a critical domain for careers in engineering, the physical sciences, and the creative arts (Humphreys & Lubinski, 1996; Humphreys et al., 1993). Systematic assessment of spatial/mechanical abilities among gifted adolescents in the Study of Mathematically Precocious Youth began in 1990, though participants are still screened for participation using verbal and math criteria from the SAT or ACT.

using above-level ability tests, not only casts doubt on the supposition of multipotentiality, it actually allows for more appropriately tailored educational programming for gifted students (Benbow, 1991, 1992; Benbow & Lubinski, 1996; Benbow & Stanley, 1996).

Interests. Early in this century, Terman and colleagues examined the educational paths and career choices of intellectually gifted individuals (Terman et al., 1925). Using an early version of the Strong Interest Inventory (Strong; Harmon, Hansen, Borgen, & Hammer, 1994), Terman (1954) noted that childhood interests among the gifted discriminated several years later between scientists and non-scientists, and that the Strong could usefully differentiate between interests in intellectually gifted populations.

In another early study of interests among gifted students, French (1958) set out to determine whether gifted college freshmen had stronger and more variable interests than freshmen not identified as gifted. Using the Kuder Preference Record to measure interests, French found that the gifted students tended to have a slightly greater number of high Kuder scores (above 75th percentile) than a control group. This difference between the mean numbers of high scores for the two groups was significant; however, no difference in variability of the number of high Kuder scores was found. In other words, breadth of interest was not different between gifted and non-identified groups, but the gifted group exhibited slightly stronger interests, on average.³

Several years later, in an empirical study of interests among gifted students, Fox (1978) compared the interest profiles of gifted seventh grade students to a normative sample of ninth grade students on the 23 basic interest scales of the Strong-Campbell Interest Inventory (Campbell, 1977; Hansen & Campbell, 1985), now Strong Interest Inventory (Harmon, Hansen, Borgen, & Hammer, 1994). She found that gifted students scored significantly higher on five interest scales relating to intellectually demanding occupations—i.e., writing, mathematics, science, public speaking, and medical science. On the remaining seventeen Basic Interest Scales, however, there existed no significant mean score differences between gifted students and the normative sample (Fox, 1978). This evidence suggests that gifted students as a whole have stronger interests in intellectual domains but not in other interest areas than average ability students. Given that gifted students were selected for the study by scoring high on either the math or verbal portions of the SAT, a test of specific intellectual or cognitive abilities, the results are not surprising. Subsequent studies have supported Fox's (1978) findings that mathematically and verbally gifted students have

stronger interests in intellectual but not other ("nonintellectual" or "nonacademic") domains (cf. Humphreys, Lubinski, & Yao, 1993; Lubinski & Benbow, 1992; Lubinski, Benbow, & Sanders, 1993; Lubinski & Humphreys, 1990).

Finally, Kelly and Hall (1993) compared the occupational aspirations and career interests of high ability students (selected by scoring above the 90th percentile on a grade-level standardized achievement test) to those of an average ability group (who scored between the 25th and 75th percentiles on the same test) and found that while level of aspiration was higher in the high-ability group, breadth and intensity of interests, following Holland's six RIASEC themes of vocational interests (viz., Realistic, Investigative, Artistic, Social, Enterprising, and Conventional), did not differ between the two ability groups.

In summary, limited data available on interest patterns among the gifted suggest that their interests can be differentiated by conventional interest inventories, that some of their interests are perhaps at higher intensities, and that the gifted have somewhat different interests than their average ability peers, but we found no evidence indicating that interests are necessarily more uniform (i.e., at comparable intensities across interest domains) among the intellectually gifted than any other population of students.

Choice of college major. In contrast to the supposition made in the literature on multipotentiality that gifted students have a broader range of educational and career areas to choose from, results from Kerr and Colangelo (1988) and Colangelo and Kerr (1990) suggested that gifted college-bound high school seniors often choose from a relatively narrow range of educational and career options. Kerr and Colangelo (1988) found that, although their extracurricular interests were quite broad, one half of the students scoring above the 95th percentile (labeled moderately to highly gifted) on the American College Tests (ACT) chose majors from only three categories (engineering, health professions, physical sciences) when presented with 196 possible educational majors. Similarly, Colangelo and Kerr (1990), in a study of perfect scorers on one or more ACT subtests, found narrow career interests and broad extracurricular interests. Aggregating results from these two studies, the most common choices of college major among moderately to highly gifted high school seniors fell into "only" five categories: engineering, health professions, physical sciences, social sciences, and business (Colangelo & Kerr, 1990; Kerr & Colangelo, 1988). These results were interpreted to indicate that gifted students were choosing from a very narrow range of possibilities, a conundrum when viewed in light of the multipotentiality assumption.

Further examination of these categories of majors, however, indicates that the apparently narrow choices of majors made by intellectually gifted students were not narrow, but instead reflect the different types of choices gifted students tend to make. The three categories into which about 50% of gifted students clustered in Kerr and

³These results should be interpreted with caution, however, due to sample selection. Specifically, students identified as gifted needed only to score in the top twenty-five percent of the standardization samples on one of two ability tests.

Colangelo (1988) are actually quite broad in terms of numbers of majors included in each category. According to the 1993 ACT profile of High School graduates (ACT, 1993), 67 of 284 (24%) possible educational majors were encompassed under the categories of engineering, health professions, and physical sciences. Furthermore, 32% of all students, both gifted and non-identified, chose majors from these categories. When the next two most popular categories, social sciences and business, were added to these top three, 100 of 284 (35%) majors were included and 55% of all students, gifted and non-identified, chose from among these categories. Comparing these percentages to the percentages of gifted students falling into these same categories, it seems misleading to conclude that gifted students are vastly more narrow (or more broad, for that matter) in their choices of major than average ability students. The results of Kerr and Colangelo (1988) and Colangelo and Kerr (1990) do, however, indicate that areas such as engineering, health professions, and physical sciences are more popular choices among gifted students than among average ability students, indicating a positive relationship between academic ability and proportions of students choosing conceptually demanding majors.

Summary

The literature we reviewed suggests that gifted students' unique abilities can be clearly differentiated if measured using tests with sufficient ceilings. In addition, it appears that gifted students' interests and educational choices are neither more broad nor more narrow, on average, than the interests or choices of average ability students. Instead, gifted students seem likely to have a particular range of interests and to choose from a particular range of educational majors corresponding to their high abilities, and these interests and choices are in general somewhat different than those of their average ability peers. Given the noted lack of empirical support for multipotentiality based on measured abilities, interests, and choice of college major, it seems plausible to reconsider whether multipotentiality poses as big a problem for gifted students as is commonly thought. More recent work offers both empiricism and a theoretical model that speaks to this question.

Examining the Concept of Multipotentiality

Theoretical Framework: The Theory of Work Adjustment

Achter et al. (1996) used the Theory of Work Adjustment (TWA; Dawis & Lofquist, 1984; Lofquist & Dawis, 1991), as a model for understanding the educational and career counseling needs of gifted adolescents. While developed as a model of vocational adjustment, the constituent components of TWA are the same variables that structure critical decisions to vocational choices, such as choosing various educational tracks (Benbow & Lubinski, 1997; Lubinski, Benbow, & Sanders, 1993). TWA integrates the important dimensions of abilities, interests, and values—the central variables of vocational psychology (Dawis,

1992)—into a coherent theory about work adjustment. Each of these dimensions is critically important and cannot be excluded in considerations about educational and career choices, inasmuch as each is conditional upon the other (Dawis & Lofquist, 1984; Lofquist & Dawis, 1991).

Following TWA, person-environment correspondence is conceptualized along two dimensions: *satisfactoriness* and *satisfaction*. In order to achieve satisfactoriness, there must be a high degree of correspondence between the abilities of a person and the ability requirements, or task demands, of the environment (i.e., occupation or educational track). To reach a high level of satisfaction, on the other hand, the needs or preferences of the individual must correspond with the types of reinforcers provided by the environment (e.g., compensation, particular working conditions). Preferences in TWA are often operationalized as interests and values (Dawis, 1991; Dawis & Lofquist, 1984).

The predicted outcome of the joint correspondence on TWA's two major dimensions, satisfactoriness and satisfaction, is the amount of time spent in a particular environment. The higher the levels of satisfactoriness and satisfaction, the more the environment and the individual will invest time in interacting with one another. Optimal adjustment, then, is predicted when personal abilities match ability requirements of the environment and personal preferences match the reinforcers available from the environment (i.e., when satisfaction and satisfactoriness occur together).

Extending TWA to gifted youth, one can readily see how the use of above-level ability testing helps in assessing the person side of the satisfactoriness dimension. An accurate assessment of ability level facilitates placing a student in an educational environment that matches the student's rate of learning to the pace of the curriculum. Proper assessment of preferences, on the other hand, complements knowledge of abilities by giving students information about which educational paths they are likely to find more personally satisfying, that is, environments that might maximize the correspondence between their interests and values and the rewards or reinforcements offered by the educational field. Therefore, choosing optimal educational settings involves finding educational areas for which an individual's abilities are well-suited and which he or she is likely to find enjoyable and rewarding.

Choosing optimal educational settings could eventually lead to discovering career alternatives that also make optimal use of gifted students' unique profiles of abilities and preferences. Indeed, analyses conducted by Lubinski et al. (1993) indicate that the same variables important for choosing and maintaining commitment to career paths also apply to choosing among contrasting academic preparations (cf. Benbow & Lubinski, 1994; Humphreys & Lubinski, 1996; Humphreys et al., 1993). The transition from educational pursuits to eventual career paths might be viewed within TWA as a developmental process involv-

ing dynamic interactions between individuals' abilities and preferences and environments' ability requirements and reward systems. Differentiated ability and preference patterns, when they exist, can be used to help individuals make informed decisions at critical choice points along the educational-vocational continuum. At each stage of the process, several possibilities may exist that roughly match a student's unique abilities and preferences, and several others can be eliminated because of mismatches along either or both dimensions.

Results

The Achter et al. (1996) study utilized the variables of TWA with gifted adolescents in an above-level format to assess the tenability of the multipotentiality concept in this population. By systematically assessing abilities, interests, and values in over 1000 intellectually gifted adolescents, they found no support for the widespread prevalence of multipotentiality among this population. These results were in sharp contrast to the high-flat profiles suggested in the multipotentiality literature.

In the ability domain, approximately 58% (158/273) of gifted 7th and 8th graders in Cohort 4 of SMPY (students who scored SAT-V 370 or SAT-M 390, original scale, by age 13; approximately the top 1% in ability level for this age-group) had ability profiles that qualified as flat when assessed in two of three general ability domains (verbal and quantitative) using the SAT. That is, for 58% of participants, math and verbal subtest scores on the SAT differed by less than 83 points, which equals approximately one standard deviation on the SAT in gifted adolescent populations (compared to a value of 100 in college-bound high school student samples). Therefore, before interests and values were even consulted, and without assessing the important dimension of spatial abilities, a full 42% of gifted adolescents in the study had math and verbal ability levels that were clearly differentiated. These results are quite telling. First of all, the criteria used to define flatness were intentionally conservative (one standard deviation is quite a broad range) so as to capture the majority of participants whose true ability profiles were undifferentiated, or multipotential. And second, as just mentioned, participant's spatial abilities were not consulted for assessing the proportion of flat profiles; adding this dimension would surely have reduced the proportion of flat profiles even further.

In the domain of preferences, Achter et al. (1996) reported that 28% (77/273) of gifted adolescents in Cohort 4 of SMPY had flat interest profiles using Holland's six RIASEC themes from the Strong-Campbell Interest Inventory, and 23% (63/273) attained Study of Values (SOV; Allport, Vernon, & Lindzey, 1970) profiles that were judged to be flat. Once again, conservative criteria were used to define profile flatness (one standard deviation, between the average of the top three rank-ordered themes versus the average of the bottom three rank-ordered themes).

Finally, only about 15% of the Cohort 4 participants in Achter et al. (1996) had conjoint flat ability and interest profiles, or flat ability and value profiles, and only 13 out of 273, or just less than 5%, had flat profiles across all three dimensions—abilities, interests, and values. Results from three other SMPY cohorts ($N=973$), assessing same-age gifted students on these measures between the years 1972 and 1994, supported the basic findings from Cohort 4.

Interestingly, in addition to these convincing empirical findings, clinical ("idiographic") analyses of the 13 Cohort 4 participants with uniformly flat profiles (i.e., across all dimensions of the SAT, RIASEC, & SOV) revealed that tests of spatial ability offered differentiation for some of these more perplexing cases. So clearly, this dimension would have contributed further differentiation to these students' ability patterns if used in primary analyses (i.e., the percentage of "multipotential" subjects would have been much under 5%). This finding is consistent with the now widely held conviction that spatial ability is a primary marker of general intelligence and adds incremental validity to verbal and quantitative abilities throughout a variety of educational and vocational contexts (see footnote 2). Indeed, the practical significance of spatial-visualization abilities continues to be markedly underappreciated (Humphreys & Lubinski, 1996; Humphreys et al., 1993; Lubinski & Benbow, 1994).

Thus, recent findings reported by Achter, Lubinski, and Benbow (1996) indicate that contrary to previous reports, multipotentiality, defined by flat ability and preference profiles, is not characteristic of most intellectually gifted adolescents. Rather, it appears that the perception of an overabundance of high-flat ability and preference profiles among the gifted is an artifact stemming from developmentally-inappropriate assessment tools having insufficient ceilings. The above analyses revealed that marked individual differences exist among gifted adolescents in attributes relevant to educational/vocational decision-making, but developmentally appropriate measures must be utilized to assess the magnitude of these differences.

Implications

Utility of Traditional Measures for Counseling Intellectually Talented Young Adolescents

One practical implication of the above analyses is that the combination of ability, interest, and value assessments, in an above-level format, appears to have educational and career counseling utility for gifted students as young as early adolescence, even though they may be several years away from making actual career choices. This is important in light of the fact that gifted students often take advantage of accelerative educational options that, in effect, escalate the rate of their educational trajectory, thereby introducing important choice-points at earlier ages.

The educational benefits of above-level ability testing with young adolescents have been demonstrated repeatedly

in talent searches throughout the United States (Keating & Stanley, 1972; Stanley, 1977; Benbow, 1991). As an extension of above-level ability testing, the concept of above-level assessment of preferences is relatively new. But some preliminary lines of evidence support its implementation with gifted adolescents. From the perspective of some career educators and teachers of the gifted, it seems that interests, values, and other preferences begin to crystallize early in this special population (Milne, 1979). In empirical studies, Terman (1954) noted that childhood interests of the intellectually gifted have been shown several years later to discriminate between scientists and non-scientists, and Flanagan and Cooley (1966) found that gifted students tend to have more developed interests and a better understanding of their personal values and attitudes than average ability students. If above-level assessment of preferences can augment information about students' abilities, then parents, educators, and counselors will be better equipped for early educational and career planning.

Lubinski et al. (1995) provided support for the overall stability of vocational interest patterns in 162 gifted 13-year-olds over a fifteen year period from adolescence to adulthood (age 13 to age 28). That is, their dominant interest theme at age 13 was significantly more likely than chance to be either dominant or adjacent to the dominant theme at age 28 (following Holland's RIASEC; Holland, 1985). A constructive replication of this study by Lubinski, Schmidt, and Benbow (1996), using an independent sample ($N = 203$), yielded longitudinal evidence for the stability of measured values over a 20-year period (age 13 to age 33). These results provide empirical support for considering above-level preference assessment in educational counseling with gifted young adolescents. Given that gifted young adolescents' preference profiles appear stable enough to be useful in counseling (cf. Schmidt, Lubinski, & Benbow, 1996), there is reason to believe that they carry incremental validity to the prediction of choices in actual educational and vocational environments over time, just as they do for somewhat older adolescents in the general population (cf. Austin & Hanisch, 1990).⁴

Practical Recommendations

The widespread acceptance of multipotentiality has done little to help gifted students in their career decision-making. It has misled professionals, parents, and students into thinking that ability and preference profiles were more

uniform than they truly were and, thus, that gifted students could be anything they wanted to be (Kerr, 1981; Kerr & Christ-Priche, 1988; Kerr & Erb, 1991; Tyler, 1992). For these reasons, the concept of multipotentiality has functionally constrained persons wanting to help gifted students in their educational/vocational decision-making process using traditional methods and measures (Dawis, 1992). Certainly gifted students are often pulled in competing directions by parents, teachers, and counselors who recognize their obvious talents, interests, and motivation to learn; and some of these individuals may unwittingly tell students that they can be anything they want to be. Or, conversely, many youngsters may simply communicate to adults what they think they want them to hear. Further, applying the label of multipotentiality seems only to perpetuate feelings of frustration in persons already at a loss for how to assist these students in their decision-making. We are unaware of evidence that the practice of labeling gifted individuals as multipotential has been helpful. Actually, doing so appears to have served to suppress their individuality and diversity.

To be sure, there is an appreciable *positive manifold* running through all intellectual abilities (Carroll, 1993; Lubinski & Dawis, 1992; Snow & Lohman, 1989), which enables the gifted to do many things well. As E. L. Thorndike (1911) was fond of saying, "all good things tend to go together." But there is a difference between liking something and *loving* something, and between being competent at something versus being *excellent* at it. Fortunately, however, above-level assessments typically tease out the most salient features of capacity and motivation among intellectually talented students. We recommend that above-level ability and preference assessments be offered to gifted students as young as early adolescence (ages 12-14). In addition, we further urge that tests of spatial ability be included in the comprehensive assessment of gifted students' abilities, as they add complimentary information to quantitative and verbal reasoning assessments (Humphreys et al., 1993). By providing gifted students clear information, they will likely come to better understand both their *strengths* and *relative weaknesses*, which will facilitate educational and career decisions as they arise.

The use of person-environment counseling theory. The application of person-environment models of educational and vocational counseling, such as TWA, often unnecessarily alarm people who believe that such models advocate a "test them and tell them" approach to counseling with a "single-choice" ideal result. In reality, neither of these criticisms is true of modern person-environment theories (Rounds & Tracey, 1990), or their historical antecedents (Lubinski, 1996). Such theories do maintain, however, as we do, that standardized assessments are a valuable tool for counseling (Dawis, 1992) but they are only one constituent among a complex of components. Standardized tests and questionnaires provide a foundation and an efficient framework for generating more idio-

⁴ Recently, through a series of cross-validation analyses, Schmidt, Lubinski, and Benbow (1996) have shown that essentially all of the psychologically meaningful information provided by SOV assessments may be captured by the Strong. These authors built six regression equations, using Holland's RIASEC themes and a number of the Strong's Basic Interest Scales, to forecast each of the six SOV themes. The results were surprising. It appears that the SOV provides no additional information (incremental validity) over and above the Strong. But the reverse is not true. The Strong provides much incremental validity relative to the SOV. The results of this study suggest that perhaps only the Strong is needed.

graphic inferences about the unique aspects of individuality among clients and students *that are likely to be valid*.

Lubinski (1996) noted that the individual differences tradition in psychology, within which person-environment theories clearly fall, is committed to facilitating optimal human development through the careful measurement of personal characteristics, followed by counseling designed to tailor developmentally appropriate courses of action (e.g., educational/vocational opportunities). This tradition emphasizes giving information and skills to individuals to enable them to take active roles in their own development (Tyler, 1992; Williamson, 1965). To these ends, Lubinski states, "optimal development occurs when opportunities are tailored to an individuals' readiness to profit from opportunities" This "readiness," at least in the realm of educational and vocational decision-making, can be reliably evaluated through the systematic assessment of abilities and preferences, as organized by TWA. We believe an optimal development framework is a worthwhile one for the practice of counseling gifted students.

We also do not suppose that a single career choice is the ultimate goal for any student, gifted or otherwise. We agree that gifted students may have several plausible options competing for their attention, and that they may be able to find, or even create, more than one career that for the most part meet their unique ability-preference constellations. But we also suggest that several other alternatives can be eliminated because of a mismatch along ability and preference dimensions. To say that any person would be equally competent ("satisfactory") at or equally fulfilled ("satisfied") with any of a multitude of careers is implausible. We can help gifted individuals make discriminative choices while still respecting the intensity of their abilities and preferences over a vast array of domains.

Like the general cohorts, intellectually gifted students may not always choose fields that represent the optimal combination of their abilities and preferences, since several outside factors can contribute to their decisions (e.g., job markets, family responsibilities and location, social commitments, etc.). With knowledge of their ability and preference profiles, however, they possess powerful conceptual tools for making choices. Counselors and educators also can use these tools to assist students whenever possible. In this way, gifted students' special patterning of abilities and preferences can be integrated into mature and specialized choices.

Conclusion

In light of the inaccuracy of the term, its widespread misapplication, and its lack of utility in serving the needs of intellectually gifted individuals, we suggest that the concept of "multipotentiality" holds little utility for intellectually talented students. In its place, we recommend implementing more comprehensive assessments with developmentally-appropriate ability and preference assess-

ment tools aimed at revealing the richness, multidimensionality, and diversity within intellectually talented populations. To be sure, truly exceptional mathematical, spatial/mechanical, and verbal gifts almost always stem from the accompaniment of an impressive level of general intelligence. This enables the gifted to be better than average at several things, but not truly exceptional at nearly as many. When objective measures of the major markers of general intelligence are coupled with preference assessments, we are closer to realizing the constellation of capacity and motivation most likely to ensure optimal development.

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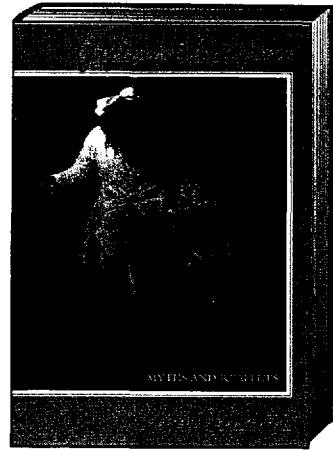
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