

Identifying Creatively Gifted Students: Necessity of a Multi-Method Approach

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Published online: 5 June 2014
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Abstract The process of identifying students as creatively gifted provides numerous challenges for educators. Although many schools assess for creativity in identifying students for gifted and talented services, the relationship between creativity and giftedness is often not fully understood. This article reviews commonly used methods of creativity assessment, looking specifically at their role in identifying students as eligible for gifted and talented programs. Issues in understanding the creativity and giftedness relationship are reviewed, with special attention given to problems in assessing creatively gifted students. A multi-method best practice approach for assessing and identifying creatively gifted students is proposed.

Keywords Creativity · Creative giftedness · Identification · Assessment · Best practice

Defining Giftedness and Creativity

The USA federal definition of gifted and talented, as outlined in the revised Elementary and Secondary Education Act of 2002, states:

The term “gifted and talented” when used with respect to students, children or youth means students, children or youth who give evidence of high performance capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who require services or activities not ordinarily provided

by the school in order to fully develop such capabilities (Title IX, Part A, Section 9101(22), p. 544).

Another popular definition of giftedness—and the one most often cited by schools—proposes that giftedness and talent are realized in several areas: general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts, and psychomotor ability (Marland 1971). The No Child Left Behind Act (NCLB Act 2002) defines gifted students as those who display evidence of high capability in intellectual, creative, artistic, or leadership areas and who would benefit from services that are not ordinarily provided by their school to fully develop their capabilities. It is evident that creativity is a common consideration when conceptualizing giftedness and consequently in the identification of eligibility for gifted and talented programs.

This paper proposes the necessity of a mixed or multi-method assessment of creativity while looking specifically at the role of creativity assessment in identifying students as eligible for gifted and talented programs. Mixed method research and assessment is defined by Johnson et al. (2007) as an approach that involves both qualitative and quantitative research, mixed kinds of data, and the analysis of mixed data in order to best answer a research question or conduct an assessment. In understanding the importance of creativity in the gifted and talented population, it is necessary to examine the construct of creativity as well as a best practice approach of assessing creativity in schools.

Historical and Contemporary Considerations

The assessment of creativity developed in response to the rapidly changing skill set is necessary for individual

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success in the twentieth century society. Creative thinking was understood as the ability to recognize problems, search for solutions, generate original ideas, and make new connections (Torrance 1966). Psychometric assessments of creativity dominated throughout much of the twentieth century. These assessments focused on measuring the qualities of divergent thinking, which was understood to be the primary operationalization of creativity. Later advancements in creativity research necessarily widened the definition of creativity, its operationalizations, and available methods of assessment.

This variety of definitions and assessments, when not properly understood and assimilated to the learning environment, poses numerous challenges to educators. Why ought creativity be supported in our schools, and how can educators best support and assess creativity in students? In this age of exceeding emphasis on assessment, accountability, and measurable outcomes, is there room in our schools to support and assess more than the traditional “three R’s”? Creativity manifests itself in many valuable ways, and so the importance of understanding and supporting this construct in education must not be overlooked.

Education in the USA has recently experienced an increasing emphasis on accountability, evidenced most notably with the introduction of the No Child Left Behind Act of 2001 (NCLB 2001). The introduction of NCLB heralded a new age of accountability, implementing mandated tests for all students in English and Mathematics, in an effort for all students to reach proficiency in English and Mathematics by 2014. The impact of NCLB on teachers has been well documented, showing that teachers now spend an increasing amount of instructional time preparing for tests and are spending less time delivering instruction in subjects that will not be tested (Clarke et al. 2003). Additionally, teachers report feeling that their creativity and autonomy within the workplace have been undermined, which leads to increased frustration (Crocco and Costigan 2007; Smith and Kovacs 2011). Given the current challenges posed to teachers who wish to support creatively gifted students, it appears all the more necessary to introduce a clear best practice approach to identifying these students.

Divergent Thinking Modern creativity research in the USA is widely understood to have begun in the 1950s and 1960s, with an emphasis on investigating the psychological underpinnings of “divergent thinking” (Craft 2001). The idea of divergent thinking as a key element of creativity was proposed by Guilford (1956) as part of his structure of intelligence theory. Divergent thinking can be broadly understood as the ability to consider several possible ways of looking at and solving problems. This is in contrast to convergent thinking, which moves in only one direction to one (hopefully) correct answer.

Guilford’s tenets of divergent thinking are fluency, sensitivity to problems, flexibility, originality, and elaboration (Guilford 1956). Fluency is the ability to produce a number of responses to questions or problems; sensitivity to problems involves recognizing problems and possible solutions; flexibility is the ability to generate several approaches to problem-solving; originality is the capacity to form ideas which are unique; while elaboration involves expanding on information which is readily available in order to solve problems. This theory of divergent aptitude was prominent throughout the latter half of the twentieth century and was the basis for many of the early psychometric assessments of creativity.

Four “p” Theory While the focus on divergent thinking had enormous impact on the assessment of creativity, more recent research frames creativity as a potential that is influenced by environmental factors. During the 1960s, the “four p theory” was established, which integrates ideas from personality, cognitive, and social research (Rhodes 1961). This “four p theory” involves looking at creativity through the lens of the creative person, the creative product, the creative press (or environment), and the creative process. More recently, a fifth p, passion, has been highlighted as an essential component of creativity (Lemons 2011). Assessments of creativity aligned with this theory would then need to address the personality traits which indicate creativity or creative potential (person), the actual piece of work which has been created (product), the environment in which the work has been created (place), and the cognitive processes involved in creative production (process). With this expansion in theory, the range of creativity assessments also broadened substantially: assessments were developed to measure not only the cognitive processes of creativity but also to evaluate the quality of the product, the personality factors such as motivation, and the impact of the surrounding environment (Feldhusen and Goh 1995). This broader understanding of creativity and its adequate assessment has important implications on the assessment of creativity in academic domains.

C-c Theory There are further theories of creativity that are relevant within educational practice. One such theory distinguishes between extraordinary (big-C) and ordinary (little-c) creativity. Feldman et al. (1994) define big-C creativity as “the achievement of something remarkable and new, something which transforms and changes a field of endeavor in a significant way” (p. 1). In contrast with this is the idea of little-c creativity, which is understood as being more prevalent in everyday life, and thus something which is likely to be experienced by the majority of students. Grigorenko, Jarvin, Tan, and Sternberg (2008) define little-c creativity as a skill used in approaching novel tasks, problems, and situations, which can

be taught and developed to the point of competency. Little-c creativity, and the implicit idea that all students possess at least the potential for such creativity, has garnered attention from educators, resulting in educational strategies that aim to support an underlying creative potential. Some of these strategies include providing adequate time for tasks, encouraging expressive ideas through varied media, integrating subjects, engaging students in higher level thinking, and fostering self-esteem (Craft 2001).

Assessment Challenges

Because of its multi-dimensional nature, the construct of creativity is difficult to measure psychometrically. The way that it is conceptualized and operationalized (and, thus, assessed) is also multi-dimensional; it can be construed as a cognitive ability, a personality trait, an aptitude, the product of achievement, a general skill, or a domain specific skill or as a combination of person, process, product, and place (Cramond and Wang 2011). Additionally, creativity can manifest itself in other valuable and productive behaviors: as fluency of ideas, eagerness to ask questions, unique solutions to problems, willingness to take risks, nonconformity, challenging existing ideas, and creation of artistic products (Johnsen 2004b).

Besides being difficult to measure because of its multi-dimensional nature, many of the above-described characteristics are often not valued by teachers, who may prefer students who aim for a particular correct answer or are satisfied with following pre-determined strategies. Consequently, creative individuals are often overlooked by teachers as candidates for gifted and talented programs, in preference of students whose behavior follows a more conformist pattern (Renzulli 2004).

Best Practices

Given the complexities of choosing a single definition or operationalization of creativity, a best practice approach would first involve the school professional being familiar with theories of creativity, which would ideally highlight the need to assess and support creativity in its multitude of manifestations. This would necessitate the practitioner to be proficient in administering a range of assessments. Additionally, a best practice approach would involve the use of both qualitative and quantitative approaches as well as several phases of identification (Ryser 2004).

Assessment of Climate Prior to assessment and identification of creatively gifted students, an assessment of the educational environment is advised. This stems from the “place” feature of

the “four p” theory of creativity, which asserts that environmental factors such as people, physical setting, and resources all affect creativity. Fleith (2010) found that teachers believed that the school environment contributes strongly to students’ creativity. In light of this, it is important to also assess the school climate for creativity. Such an assessment ought to involve teacher interviews, focusing on teacher knowledge of, and attitudes towards creativity. Specifically, Fleith (2010) proposes a qualitative approach for conducting such interviews with both students and teachers, including the use of semi-structured and open-ended questions about the classroom environment, activities implemented to enhance creativity, teachers’ understanding of creativity, and the criteria by which they judge a student to be creative.

The KEYS: Assessing the Climate for Creativity (Amabile et al. 1996) is one possible tool to implement. It was developed to assess perceived support and inhibitors to creativity in work environments. The scale measures key factors that are hypothesized to impact creativity: encouragement of creativity, autonomy or freedom, resources, pressures, and organizational impediments to creativity. The KEYS scale could be administered to teachers in order to assess specific elements of the school/classroom that either support or inhibit the development of a creative environment. The practice of assessing environmental supports for creativity through both qualitative and quantitative measures will provide valuable insights into attitudes towards creativity and current factors that promote or impede creativity within the school. These types of environmental measurements could be beneficial in identifying those areas of support that would be crucial to address before a school begins to identify individuals as creatively gifted.

Individual Identification In terms of assessing individual students, Johnsen (2009) proposes a best practice approach to identification consisting of three stages: a nomination phase, an assessment phase, and a selection phase. As noted above, it is essential that appropriate planning is in place so that identified students can be appropriately served by existing gifted program(s) within the school district (Johnsen 2009; Worrell & Erwin 2011).

Within the initial nomination phase of identifying academically gifted students, the use of parent and teacher nomination forms is recommended (Worrell & Erwin 2011). While this method can prove successful in identifying students who are academically gifted, it may present issues in identifying creatively gifted students. Renzulli (2004) outlines a possible divergence between classroom behavior of academically gifted students versus creatively gifted students and consequent teacher bias. As outlined earlier, many features of creativity such as willingness to take risks, nonconformity, and challenging existing ideas are often not valued by teachers (Johnsen 2004b; Renzulli 2004). This bias may undermine

the validity of nomination forms. Nomination forms have also been found to have questionable reliability (Pfeiffer and Blei 2008) and so it is recommended that they be used as a beginning step within a multi-method identification process rather than as a significant determinant of whether a student be recommended for further assessment (Lee and Olszewski-Kubilius 2006). In other words, students should not be fully discounted from possible further assessment on the basis of teacher nomination (or lack thereof) only.

Given the complexities of choosing a single definition or operationalization of creativity, a best practice approach would involve the school professional being proficient in administering assessments which can identify creativity however it manifests. There are several key considerations in choosing appropriate assessment measures: deciding whether general or specific skills are being measured, deciding what tests, scales and behavioral observations will be used, deciding how data will be synthesized, and deciding how data will inform classroom practice (Feldhusen and Jarwan 2000).

A Note on Intelligence Traditionally, results from standardized intelligence tests have been used as part of the assessment phase of identification of giftedness, because of the robust correlation between intelligence and academic achievement (Rohde and Thompson 2007). This highlights the primacy that intelligence holds in most conceptualizations of giftedness in school children. However, it is important to consider here the relationship between intelligence and creativity and how this will inform an assessment practice. The threshold theory states that in order for creativity to be present, there must be a moderate level of intelligence, as measured by standardized intelligence tests (Runco 1991). Research based on this theory have shown inconsistent results, with some studies showing that correlations between IQ scores and creativity are stronger in groups of students with average intelligence than in groups with high IQ scores (Barron 1969); other studies find no such difference in correlations across groups of differing intellectual ability (Runco & Pezdek 1984). As there is no clear or consistent relationship between creativity and IQ, a best practice approach would encourage consideration of not utilizing, or at least under-emphasizing, IQ scores when the sole referral question is whether or not the student is creatively gifted.

Another method of identification during the assessment stage is the use of behavior rating scales that specifically assess creativity. Teacher rating scales have historically been very popular amongst teachers in identifying students for gifted and talented programs, being the second most popular instrument after IQ tests (Pfeiffer 2002). These scales initially focused specifically on measuring academic achievement with particular subject areas, although as conceptions of giftedness expanded, scales were developed in order to measure creative as well as

cognitive characteristics of students (Renzulli et al. 2009). There are several behavior rating scales available based on multi-modal conceptions of giftedness that measure creative behaviors and demonstrate strong validity and reliability (Pfeiffer and Blei 2008). The Gifted Rating Scale, completed by teachers, operationalizes creativity as the ability to produce unique, new, or original ideas and products; novel problem-solving; engage in imaginative play; and experiment with new ideas (Pfeiffer & Jarosewich 2003). Another instrument, the Scales for Rating the Behavior of Superior Students, also completed by teachers, conceptualizes creativity as an aptitude in music, art, or drama (Renzulli et al. 2009). Use of the latter should be done with full understanding of its rather narrow definition of what constitutes creative behavior. Properly contextualized, behavior ratings of creativity can be a useful method during the screening stage of identification, providing teachers with information about students who may be creatively gifted across a range of domains.

Assessing student work products or portfolios can be an extremely valuable source of information regarding student creativity. Considering the multi-dimensional nature of creativity, assessing student creativity through multiple sources of data is recommended (Brown et al. 2005) and is a necessary component of a best practice approach to identification. This approach, defined as alternative assessment, includes performance-based assessment, portfolio assessment, and dynamic assessment (Pfeiffer and Blei 2008). Performance-based assessment requires students to produce an original product or to act in a prescribed way, such as writing a story, designing an experiment, acting, or problem-solving. Rubrics can be developed to assess the quality of such performances, judging the work on depth, complexity, and advancement of direction (Van Tassel-Baska 2003).

Portfolio assessment involves a review of students' creative work reflecting the quality of their products and accomplishments (Johnsen 2004a). Portfolios can be assessed using rubrics, specialized scales, or consensual techniques. Creative products can be assessed using creative product scales, such as the *Creative Product Semantic Scale* (Besemer & O'Quin 1986). The Creative Product Semantic Scale (CPSS) was designed to assess creativity of products across a diverse range of fields, including performance, engineering, product design, and creative writing. The CPSS assesses products along three dimensions: novelty, resolution, and elaboration or synthesis. The novelty dimension assesses whether a product is original, surprising, or germinal. The resolution dimension assesses how well a product meets the practical needs of a problem, while the elaboration or synthesis dimension assesses aspects of style. The scale is easy for teachers to administer and can also be used in teaching students to analyze the creative quality of their own work

(Besemer & O'Quin 1989). Creative products can also be assessed using the consensual assessment technique, in which experienced judges rate the creativity of products and inter-rater reliability is established, in order to assess the creative quality of products (Amabile 1982). In light of the scarcity of resources that many schools face, it is recognized that this approach may not be feasible in all circumstances.

Dynamic assessment is based on Vygotsky's theory of the zone of proximal development (Vygotsky 1978). It focuses on how a student interacts with a task when provided with feedback, the skills a student employs when solving complex problems, and the learning strategies they employ (Kirschenbaum 1998; Lidz and Elliott 2006). Within dynamic assessment, students are provided with assistance and feedback during the assessment and are assessed based on their use of cognitive and metacognitive strategies and their responsiveness to assistance when completing the task. There are no standardized assessments available for dynamic assessment, with this technique relying instead on a "pre-test, intervene, post-test" administration of a standardized assessment (Calero et al. 2010; Lidz and Macrine 2001). Within this approach, mediation is offered on beginning items missed during the pre-test, followed by administration of the post-test. Scores during the mediation phase are awarded dependent on the degree of feedback that the student needs in order to achieve the correct answer. Lidz and Macrine (2001) developed a useful rubric to guide the mediation stage of dynamic assessment, which can be adapted to other standardized tests used in dynamic assessment. Considering the emphasis placed on problem-solving within many definitions of creativity, using dynamic assessment to evaluate students' problem-solving skills in context has the potential to be very informative. The many approaches within an alternative assessment paradigm offer the opportunity to gain information about creatively gifted students that may not be available through the use of IQ tests or nomination forms alone.

In addition to using alternative assessment, schools may consider the use of other standardized, norm-referenced tests of creativity. This approach can be beneficial when implemented within appropriate conditions (e.g., when a clear operationalization of creativity has been consistently adopted at all stages of screening, assessment, identification, program placement, and program development). Without strict adherence to a consistent operationalization of creativity across stages of identification, psychometric tests of creativity cannot be utilized within a best practice approach to identifying creatively gifted students (Hunsaker & Callahan 1995; Lemons 2011). One of the most widely used tests of creative thinking has been the Torrance Test of Creative Thinking (TCTT), developed by Torrance as an expansion of Guilford's tests of divergent thinking (Torrance 1966). The TTCT consists of a verbal test titled "Verbal TTCT: Thinking Creatively

with Words" and a figural test titled "Figural TTCT: Thinking Creatively with Pictures" (Torrance 1966). Responses to the verbal tests are written or oral, while responses to the figural tests are drawn. The verbal test consists of six exercises measuring fluency, elaboration, and originality. The figural test consists of three exercises measuring fluency, elaboration, originality, resistance to premature closure, and abstractness of titles. The TTCT provides both a composite score and individual scores for fluency, elaboration, originality, resistance to premature closure, and abstractness of titles.

When addressing the construct validity of the TTCT, it is important to note that it operationalizes creativity through a single cognitive process, the act of divergent thinking. In order to accept the construct validity of the test, it is necessary to accept that divergent thinking is the only possible operationalization of creativity. As has been demonstrated, research has found the construct of creativity to be composed of more complex operations than divergent thinking alone. While these are valid criticisms of the TTCT, in light of the diverse nature of the construct of creativity, it is a viable option for practitioners as long as results are properly contextualized and supported by other data.

Identification In accordance with Johnsen's best practice approach to identification of gifted students, the nomination and assessment phases must be followed by a selection phase (Johnsen 2009). As is evident, appropriate selection can only be conducted after a thorough multi-method nomination and assessment process. It is recommended that the selection phase involve a selection committee conducting a thorough review of data for all students who have been nominated and assessed (Johnsen 2004a; Renzulli 1990). Within a best practice approach, the selection committee ought to include school or district educators who have received specialized training within the field of gifted and talented education (Ford 1998; Johnsen 2004a; Renzulli 1990). With regard to placing creatively gifted students in gifted and talented programs, it is advised that specific programming be devised in accordance with the creatively gifted students' particular strengths (Johnsen 2004a). Additionally, school personnel ought to continue to collect data throughout the implementation of the gifted program, in order to ensure that the program is meeting the needs of participating students (Callahan 1986).

Conclusion

It is evident that the construct of creativity requires a creative approach in its measurement, looking at individuals from a variety of perspectives and using a range of assessment strategies in describing creative potential and accomplishments. A best practice approach to assessment and identification of

creatively gifted students requires commitment from school personnel. An approach involving several phases and multi-method assessments of creativity is the optimal route to assessing creativity in identifying students for gifted and talented programs. Several elements are critical to the success of such a model, including teachers receiving adequate training to recognize and assess all students for eligibility, schools basing instruments and assessments upon their definitions of creativity, and drawing on the strengths of both qualitative and quantitative approaches in utilizing multiple methods of assessment. In diversifying our assessment methods, we can hope to diversify our conception of creativity, our conception of gifted and talented, and, most importantly, our conception of who may be eligible for such programs.

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